

AMERICAN VETERINARY REVIEW.

DECEMBER, 1895.

EDITORIAL.

A STEP FORWARD.—Upon different occasions for many years past, we have expressed our opinion in reference to the fact that one of the greatest proofs of union, in a professional point of view, had not yet been riveted in this country between the medical and the veterinary professions, and, in fact, that the central medical associations of many of our States were unwilling to recognize it by keeping away from their membership veterinarians, even when they were members of the medical profession as well.

For years back we have pointed out the fact of the incomplete condition of those societies, because in their various sections or departments, one of veterinary medicine was lacking, calling their attention to the different state of affairs in continental medical organizations.

It was, therefore, with great satisfaction that we received, a few days ago, information that a meeting of the Section of Public Health of the New York Academy of Medicine was to be held, and that the subject of tuberculosis was to receive special attention.

But not tuberculosis in the point of view of medical men, but treated and spoken of by no less than five veterinarians. And it is in this way that it was announced that an introduction on "Tuberculosis as Viewed by a Veterinarian," "The Work of Foreign Veterinarians in Tuberculosis," "The Control of Tuberculosis in Massachusetts," "The Best Methods for the Eradication of Tuberculosis," and "The Transmission of Tubercle Bacilli and Tubercular Products in Milk," were presented before members of the Academy of Medicine and

a number of veterinary students, who had been kindly invited.

The general discussion, in which several physicians present participated, was followed with much interest.

This meeting, and the recognition of the veterinarian in such official manner, must be very gratifying to us. It certainly indicates that the physicians are now prepared to receive us in their societies, and that if we are not yet ready to be active members, properly speaking, to take part in all their labors and discussions, the day is not far off when veterinary sections, in the strict sense of the word, will be organized, and when both sister sciences will work side by side.

Who shall take the lead in this new organization? Shall the veterinarians in a body ask it? Shall the physicians be the first to favor it?

NEW YORK STATE VETERINARY COLLEGE.—We take pleasure in presenting our readers an illustrated description of this new addition to Cornell University—which, thanks to the kindness of the editor of the *New York Weekly Times*, we can reproduce in full.

VETERINARY COLLEGES OF NORTH AMERICA.—In the October REVIEW publication was made of the Veterinary Schools of North America, and some were overlooked. It gives us pleasure to add to the previous list the following:

IOWA AGRICULTURAL AND MECHANICAL COLLEGE—VETERINARY DEPARTMENT. Ames, Ia.

Fundamental Faculty.—M. Stalker, M.Sc., V.S., Professor of Anatomy and Veterinary Medicine. W. B. Niles, D.V.M., Professor of Surgery (General and Operative) and Obstetrics. W. H. Harriman, B.Sc., M.D., Professor of Histology, Physiology and Pathology. F. B. McCall, D.V.M., Lecturer on Shoeing in Health and Disease. A. C. Bennett, M.Sc., Professor of Chemistry.

H. Osborn, M.Sc., Professor of Zoology and Animal Parasites. L. H. Pammell, B.Ag., Professor of Botany and Bacteriology. James Wilson, Professor of Principles of Heredity and Animal Nutrition. A. R. Amos, M.D., Lecturer on Ophthalmology. A. R. Wake, D.V.M., House Surgeon and Demonstrator of Anatomy. Jos. Chamberlain, M.Sc., Assistant in Chemistry. S. W. Bryer, B.Sc., Assistant in Zoology.

Terms.—Tuition free. Small charges for dissecting material, accommodations in students' sanitarium, chemical material, and for breakage in pathological laboratory.

Address Dr. M. Stalker, Ames, Iowa.

UNIVERSITY OF CALIFORNIA—VETERINARY DEPARTMENT.

Fundamental Faculty.—W. F. Egan, M.R.C.V.S., Professor of Principles and Practice of Veterinary Surgery and Equine Medicine. F. A. Nief, B.Sc., D.V.S., Professor of Comparative Anatomy. A. Auchie Cunningham, F.C.S., F.I. Inst., etc., Professor of Chemistry, Materia Medica and Toxicology. S. J. Fraser, B.A., M.D., Professor of Physiology and Histology. Frank W. Skaife, D.V.S., M.R.C.V.S., Professor of Helminthology, Canine Medicine and Surgery and Dermatology. K. O. Steers, V.S., Professor of Therapeutics and Botany. Thomas Maclay, M.R.C.V.S., Professor of Bovine Medicine and Obstetrics, and Veterinary Sanitary Science. Henry B. A. Kugeler, M.D., Lecturer on Pathology and Bacteriology.

Fees.—Tuition, \$100 each year; matriculation, paid once only, \$5; demonstrator of anatomy's ticket, \$10; pathological anatomy, \$10; breakage fund, \$5; diploma fee, \$25.

Address F. W. Skaife, D.V.S., M.R.C.V.S., Dean, 18 Cedar Ave.

These are both three-year schools.

ORIGINAL ARTICLES.

STUDIES IN THE PERITONEUM.

THE PERITONEUM OF THE GRAY (TREE) SQUIRREL (RODENTIA).

By BYRON ROBINSON, Professor of Gynæcology in Chicago Post-Graduate School.

A comprehensive view of the peritoneum can only be attained by pursuing embryologic and comparative work as well as studying the adult structure of humans. To the order of rodentia belong the rabbit, squirrel, gopher, rat, beaver, etc. I carefully dissected, of this order, the rabbit, squirrel and gopher. They differ but little. The squirrel has two colonic loops in the descending colon, the gopher one, and the rabbit has no double colon, i.e., loop, in the ascending colon. The chief difference found in the rodents from that of man lies in the relation of the transverse colon and the great omentum. Man has a ligamentum phrenico-colicum; the rodents do not.

The examination of the squirrel in question showed a body twelve inches long. The omentum reached half way from stomach to pelvis. It does not cover cæcum, and is filled with waxy white fat; it is ample to reach pelvis by stretching out. Its origin from the greater curvature of the stomach follows the much twisted stomach around the duodenum, to

the point where the left loop of the colon meets it, showing that the meso-gaster and meso-duodenum are one and the

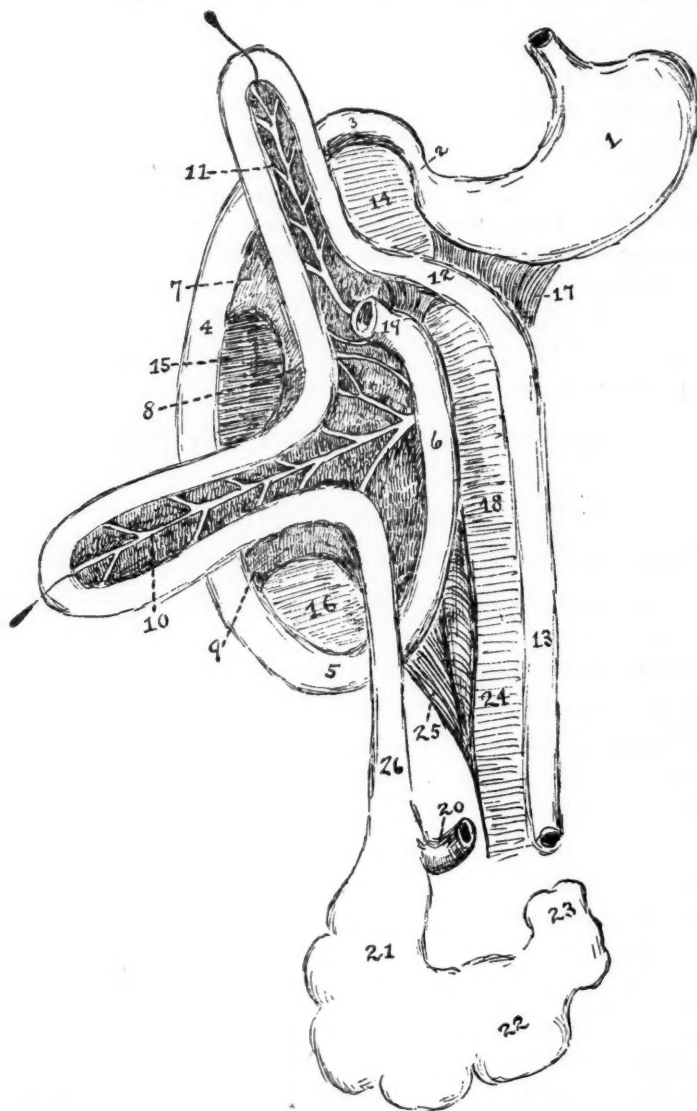


FIG. 1.

same thing. The spleen lies entirely free in the cavity enclosed in the blades of the omentum. The meso-gaster rises precisely from the mid-dorsal line, as shown by this omentum.

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The lesser omental cavity shows no adhesions at either end. Huschka's foramen admits tip of little finger, showing Spigel's lobe projecting through it; Winslow's foramen admits pencil. The special twist in stomach is at the pylorus. The lesser omentum is one inch broad and has a perpendicular fold raised in the center, which attaches the liver lobe to the pyloric end of the stomach. The ligamentum hepato-duodenale has a very sharp border. The three distinct divisions of lesser omentum are not sharply defined, as in man. The cæcum lies on left iliac fossa curled up; three inches long; four to five times as large as any other portion of gut, is sacculated, and has three tenia coli; is much smaller at distal end; it has a distinct and entirely free mesentery. The cæcal fossa, superior and inferior, are present. The ascending colon lies in the right lumbar region; twelve inches long, beginning at first colonic loop. The colonic loop next to the ilium, and two inches from it, is two inches long. Each of these loops is supplied by one artery and one mesentery. The first loop from the rectum begins its relation with the great omentum at its base, and this relation extends to the left kidney, a distance of one and one-half inches. In rotating, this loop has begun to displace the meso-duodenum. The next loop passed diagonally across meso-duodenum, appropriating it as far as the duodenum itself, dividing the duodenal loop into three segments; whereas in man it divides the duodenal loop into two segments. The transverse colon is one and one-half inches long. It has assumed relation with the great omentum parallel to the pancreas, which is two inches long. The pancreas reaches about half way down the duodenum, which is six inches long. The pancreas is totally within the meso-colon and also in the meso-gaster, and is not retro-peritoneal in any part. The descending colon begins at the left end of the spleen, where its relations have ceased with the great omentum. The descending colon is inserted directly in the middle line of the abdomen. The descending meso-colon and part of the ascending meso-duodenum have coalesced. This has probably occurred during the axial rotation. From the colonic loop next to the entering ilium the colon is not sac-

culated, nor shows visible *tenia coli*, nor *appendicæ epiploicæ*, but the *fæcal matter* produces a bulging. The sigmoid flexure and meso-colon descendens together are one and one-half inches long. The transverse meso-colon is flat against the meso-duodenum. The ascending meso-colon is free for two inches. The colon is smaller in size than the small intestine. A very long mesentery commensurate the loops would herniate. There is no *fossa duodeno-jejunalis*, as in man, but the duodenum has attached to it a very wide meso-duodenum, whose origin is in the middle line. The duodenum is six inches long and its meso-duodenum is one and one-half inches. The pylorus lies to the right of the median line. The small intestines are four feet, three inches long, and the mesentery two inches. The mesenteric glands are in a single row, of some sixteen to eighteen in number. It is the single mesenteric gland like the pig's. The kidney is almost surrounded by peritoneum and is very loose; the fat reaches almost from base to top; almost buries it. There is an excessive amount of fat around each kidney. The spleen is one and one-half inches long and is the shape of a dog's tongue. Its gastro-splenic omentum is three-fourths of an inch long. The liver has nine lobes, lies in middle of body. The gall-bladder is the size of a pea. The left coronary ligament has exactly the same relation to the liver in the squirrel as in man. It extends from the upper surface of the left lobes to the diaphragm and not to the posterior border. The right coronary ligament is the same as in man, but also extends from the upper surface to the right lobe of the diaphragm, and not from the edge or border. From some of the lobes extend separate or distinct ligaments of peritoneum, as if accessory suspensory ligaments. In this specimen the distinct three divisions of the lesser omentum are similar to man, i.e., the *pars tendineus*, *pars flaccida* and *pars hepato-duodenale*. The *vas deferens* lies in wide folds of peritoneum filled with fat, which exist on each side of the bladder. The inferior mesenteric vein empties into the splenic vein at junction with the superior mesenteric, as in man. The left kidney is one-half an inch lower than the right: forced down by the bulging stomach.

GENERAL OBSERVATION OF THE SQUIRREL'S
(RODENTIA) PERITONEUM.

The squirrel's abdomen being open, the mighty cæcum lies curled up on the left side of the left iliac fossa. The two (double-barreled) double colons lie on the right side, parallel to each other and to the body, one anterior (upper), and the other posterior (lower). The one nearest to the cæcum is some three inches in a large gray squirrel, and the next is two inches, i.e., one is about two-thirds as large as the other. The use of these loops of colon, held in a single mesentery, and fed by a single artery, must have been originally for the same purpose as the enormous cæcum, viz.: secondary stomach where the food could tarry and be fully digested. The apparent danger of such double colons and such free, mobile cæca and added mesenterium commune is volvulus, and Dr. Baker, professor in the Chicago Veterinary College, informs me that this is just what often occurs in the horse.



FIG. 2.

The squirrel's (rodent's) peritoneum is very thin and almost transparent. It is very luxuriant and abundant. Excessive long folds exist. The great omentum is large enough to reach into the pelvis, but is not so large as that of the carnivora (cat and dog). The relation of the great omentum with the transverse colon and the relation of the ascending colon (with its loops) with the anterior face of the meso-duodenum is distinctly that of displacement, readjustment or appropriation of peritoneum. But the relation of the meso-duodenum (of the last ascending part) with the descending colon is difficult to interpret. Whether the two double folds have blended, coalesced, or readjusted themselves will require further study to decide.

How susceptible the rodentia are to peritonitis I have no means at present of knowing. The vigorous and extensive twist and rotation of the stomach in rodents is remarkable. I found no evidence of residual peritonitis in the squirrel, as in man.

The gopher (rodent) is an animal belonging to the same genera as the squirrel. Its visceral serous membrane differs from the squirrel in that the gopher has only one (double) colonic loop in the ascending colon. The double colonic loops I have found in solipeds (horse). They are fed by one artery and held in relation by one narrow mesentery. No doubt the similar double colonic loops in man are reversions (atavism) to solipeds (horse) or rodents (squirrel).

The difference between the peritoneum of man and squirrel (rodents) is not very great. The axial rotation in the squirrel's navel loop is not quite so complete as in that of man. In another sense it is more complete, for all herbivora possess a well-developed peritoneum and viscera, for the nature of their food evolved an advanced digestive apparatus. The squirrel has a long, free duodenum attached to a free, long meso-duodenum. Both surfaces of the meso-duodenum are faced by shining pavement endo-thelium, which characterizes the peritoneal surface. In man the shining pavement endo-thelium is displaced from both sides of the meso-duodenum, leaving only the real neuro-vascular visceral pedicle.

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The relation of the transverse colon and great omentum differs in that its relation to the left side does not produce a ligamentum phrenico-colicum as in man. In no rodent did I find residual peritonitis as I have in man and solipeds.

Fig. 1. This sketch I drew from nature, the subject being a gray tree-squirrel (rodentia). It represents the long, free duodenum (3, 4, 5 and 6), and the descending colon as it passes in front of the left blade of the meso-duodenum. 1, stomach; 2, pylorus; 3, 4, 5 and 6, duodenum; 7, 8 and 9 shows the ascending meso-colon dragged up from the left blade of the meso-duodenum. 10 and 11 point to the arteries of the two loops of the ascending colon which are put on a stretch by the two hooks at the top of the loops. 26 marks the ascending colon just before it widens into the cæcum. 13 shows the straight rectum with its meso-rectum inserted in the middle line. 14, 15 and 16 mark the left blade of the extensive meso-duodenum, over which the ascending colon is irregularly spread with its two loops. The loops in the living animal lie parallel to the body, with their tips posterior. 17 is a significant mark, as it shows the right beginning relations of the great omentum with the transverse colon joint. It is the standard which I have chosen in man as the upper end of the ascending colon. It will be either the right edge of the ligamentum hepato-duodenale, or the right edge of the ligamentum hepato-colicum. I did not sketch it as extending far enough to the right, because I wished to represent the meso-duodenum. 12 is the upper right border of the ligamentum hepato-duodenale, or the ligamentum hepato-colicum, and 17 is the right portion of the ligamentum gastro-colicum, or the great omentum. 18 and 24 represent the descending meso-colon inserted directly in the middle line. The left kidney does not disturb it as in man, nor steal a part of it to cover its surface as in *bimana*. 19 points to the lower end of the duodenum, or the beginning of the jejunum. 20 is the ilium entering the ascending colon. 21, 22 and 23 are the cæcum. There is no appendix in a squirrel. (The only animals possessing an appendix are the wombat, man and the higher apes). Observe the peculiar fold at 25, which is found with

peculiar distinctness in the dog. The fold is not correctly shaded and should extend on the meso-colon descendens from 18 to 24, i.e., the insertion of the fold marked at 25, is at considerable distance from the root of the meso-colon descendens. This fold is, in my opinion, due to the rotation of the navel loop. The cæcum started at 12 and travelled, by the aid of growth and rotation of the navel loop, to the adult home in the right iliac fossa. Developmental processes in the peritoneum may be easily observed in the various species of animals.

Fig. 2 is a life-sized drawing which I sketched from a gray tree-squirrel (rodentia) to represent the cæcum and first or lower loop of the ascending colon. It is drawn as closely as possible to nature in size and form. 1, 9 and 4 mark the artery which supplies the bowels. 8 and 7 mark the lower loop of the ascending colon. 2 marks the ascending colon between the lower and the entering ilium. 3 notes the artery passing behind the ilium. 5 and 6 mark the cæcum. Its exact proportions are represented to the ascending colon from a squirrel with a body twelve inches long. The monstrous cæcum fills almost the entire lower (posterior) abdomen. The danger of such a cæcum is volvulus. In the squirrel it lies more in the left cavity than in the right. It is much less in size in proportion to the rabbit. The squirrel has no appendix except what is seen in the picture. The peritoneal folds of the squirrel are much more extensive and liberal than in man. No peritoneal adhesions of any kind were found in this squirrel. The cæca of the herbivora, rodentia and solipeds which I have carefully examined, as to size, relations and peritoneal coverings, seem to be the remnant of some ancient stomach, or pouch where food could tarry until it was absorbed or utilized.

ON IRON AND ITS ASSIMILATION BY THE ORGANISM.

By L. H. FRIEDBURG, PH.D., Professor of Chemistry and Toxicology, American Veterinary College.

In a paper read before the Academy of Medicine, on Tuesday, October 15, 1895, I took occasion to state mainly the following points in regard to the above question:

Of the normal iron of our body which is excreted in metabolism, about 10 per cent. appear in the urine and about 90 per cent. are excreted by the intestinal mucous coat.

If we inject iron hypodermically or intravenously it will appear in the very first minutes in large quantity in the urine, without, however, being firmly linked to organic material. In such a case we observe metal kidney, the parenchyma having been attacked.

Of the iron, however, which had been administered per os and was not merely received by the system, but assimilated, we may suppose that it will be secreted like the normal iron, 10 per cent. per urine and 90 per cent. per fæces. But then that 10 per cent. will be firmly linked and not detectable by the ordinary reagents.

The mentioned 10 per cent. must therefore be considered as a measure for assimilated iron. The average amount of normal iron voided in 24 hours is one milligramme.

To determine whether in a case of administration of iron compounds the firmly linked iron in the urine is increased or not, and for how much, we must be led by the foregoing considerations.

It has to be stated that none of the iron medicines existing heretofore, of any name whatever, sensibly increase the mentioned amount, that we consequently are not justified in considering them to have been truly assimilated.

When Bunge at the May meeting (of the year) of European naturalists at Munich, emphatically states "the best place for buying iron is not the drug store, but the vegetable and egg market," referring to yolks and spinach, he was right in so far as in those substances the iron is contained linked in such a manner as to appear in a form ready for assimilation. But he forgot that newer researches had attempted, and successfully attempted, to furnish such compounds in which the iron was firmly linked to an albuminoid substance, in which it was contained to the amount of about 2 per cent. This substance is Kobert's hæmogallol.

Kobert satisfied himself by prolonged experimental study, that most if not all of the then existing iron compounds were

not assimilated. However, he faced the fact, as well as every one of us, that some of these substances were of a certain beneficial result. This he explained then as consisting in an entirely secondary mode of action. An action of the iron upon the intestinal gases, mainly upon hydric sulfid, with which the iron would combine, forming black ferrous sulfid, eliminating it as one of the poisonous intestinal gases and rendering its action upon the iron contained in the blood impossible. Also a mucin-iron would be formed.

But then Kobert did not rest there. He found that the chicken was able to produce its hæmoglobin, embryonically and post embryonically, from yolk of egg. Experiments with this substance upon carnivora, including man, were not encouraging, since yolks are not compatible in large amounts. On the other hand he found that the dog, which scarcely can be said to feed upon yolks, covers the entire metabolic loss of iron by the blood which he partakes of in his food.

The blood is therefore to be considered the true starting point for the correct administration of iron to be assimilated. Now, all the blood iron preparations existing heretofore had two drawbacks. They consisted either of pure dried blood, which is objectionable from two points of view: first, from that of taste; second, by the fact that it covers the intestinal canal with a black tarry mass. Or such blood was mixed with iron salts which as such had no value other than that of neutralizing H_2S , but which eventually produced impaired digestion, if not worse than that, metal kidney, after prolonged use. Nevertheless, the dog stood there as a living example of a carnivora partaking successfully of blood.

Now Kobert reasoned thus: If for the human system the dog cannot appear as a prototype, what could be abstracted or learned from this example concerning man? What is the fate of blood partaken of as a food? The action of the intestinal tract upon such substances as blood is a reducing one. The word reducing is to be understood in a chemical sense. It had therefore to be tried what effect reducing substances would have upon the blood, extra corpus, and then if such action was discernible how would the products obtained act after internal administration.

Experiments were performed with the different reducing substances which chemistry disposes of. Finally pyrogallol was tried, and resulted in a substance called hæmogallol. Solution of cattle blood freed from stroma is heated with concentrated aqueous pyrogallol. After different manipulations the primary, impure, reddish brown precipitate is finally obtained in the pure form of a tasteless, not smeary, powder of dark brown color and insoluble in water.

9.7 grammes of iron in form of hæmogallol increased the amount of firmly linked urine iron to the amount of 150 per cent. This increase cannot be attributed but to the hæmogallol assimilated.

The question whether this substance contained free pyrogallol, which pathologically, by decomposition of blood corpuscles, would increase the iron of the urine, is absolutely excluded by three experiments. Water does not dissolve any of it from hæmogallol. Fresh blood is not acted upon by hæmogallol and the spectrum remains unchanged. A small cat after the administration of 10 grammes remained in perfect health, and showed no diminution in the amount of red corpuscles.

Then animal experiments were resorted to, and it was invariably stated that, even in excessive doses, such as never would apply to man, the animals remained healthy and increased in weight.

When at last the experiments on man were begun it was shown that the action of hæmogallol upon chlorotic or anæmic patients was invariably an extraordinarily favorable one.

In one particular case where ferrum sulfuricum and the chalybeate waters of Pyrmont were without use, hæmogallol acted splendidly. Even an individual case of pernicious anæmia was doubtlessly temporarily relieved, and the number of blood corpuscles, as well as of hæmoglobin, was found to be increased.

A female patient suffering incessantly of anæmic headache has been *entirely* cured by the use of hæmogallol (Friedberg). Two patients whose menses had stopped for some length of time were restored to normal conditions after three

to four weeks' administration of hæmogallol (0.3 grammes were taken three times per day). The profession of Russia, Germany and Austria has decided favorably in regard to the action of hæmogallol—by means of an interrogatory circular which has been sent abroad.

There is no reason, therefore, for the practitioner to be skeptical. Even in case of a weakened condition of the digestive tract hæmogallol may be prescribed, since no deleterious action in the sense of the older iron proportions ever occurred.

HÆMOL AND ZINC HÆMOL.

For hæmol results have been obtained on animals showing that even direct intravenous application did not produce any symptoms of disease.

Hæmogallol, as well as hæmol, are therefore the two iron compounds par excellence which are of no detrimental action whatever, and which allow successful application even in the gravest forms of anæmia.

The hæmogallol is, so far, preferred, since it is the more tasteless one of the two preparations.

Kobert did not stop there. He prepared compounds of hæmol with the heavy metals, iron, copper, mercury, and with the haloids, iodin and bromin. Even a mercur-iodo-hæmol has been prepared.

The non-corrosive copper compounds just begin to attract attention in regard to their action in case of chlorosis, which *Cervello* has described. Copper hæmol is indicated in preference to the other proportions, which are still more or less caustic.

Professor Koch has performed experiments with copper hæmol on lupus patients. The lupous infiltrations were reduced and the skin returned partly to normal appearance. In France these experiments are just now studied further.

The mercurio-iodo-hæmol and brom-hæmol are to be recommended for the double action of blood reconstructors and specifics. The iodo-mercurio-hæmol is positively to be considered at present as the most suitable specific against syphilis.

The preparation is not a mere mixture but a definite organic compound.

Brom-hæmol, though containing less bromin than potassium bromid, is preferable to the latter, because it is not as soluble and is not secreted as rapidly by the urine. In cases therefore where an inundation of bromine is not necessary (I remind of neurasthenic patients or women in climacteric age) certain advantages are gained.

I will conclude by giving a few observations of *Rille*, one of the most reliable European syphilidologues. He says: "We cannot thank Kobert enough for his preparation containing mercury and iodine, which has the advantage to show fewer secondary effects, such as salivation or stomatitis, dysenteric appearances, etc., etc."

Twenty-five patients were treated so far with mercurio-iodo-hæmol, and in no instance had the treatment to be stopped because of the appearance of mercurial symptoms.

In a few cases in which the mouth was not cared for according to the rule of art, salivation and swelling of the gums obtained, but, without the foetid *pus* peculiar to genuine mercurial stomatitis.

One third of the cases offered in the first few days of treatment three to four mushy and diarrhoeal discharges, which, however, disappeared afterward without the application of styptics. The mucous intestinal coat had become accustomed to the drug. The *curative* action cannot be said to be pronounced better than with other mercurials, but is of analogous value as that of mercuric iodid. However, even here, towards the termination of the cases, *no* injections had to be resorted to.

The treatment consisted of: In the beginning, 5 grammes distributed upon 60 pills, 6 of which were administered daily. The therapeutic effect being somewhat tardy, the doses were then doubled.

The series of experiments included all stages of the syphilitic process.

Maculous syphilis required for its disappearance an average quantity of 110 pills, equal to a treatment of 16 days. In papulous cases 170 pills were needed.

A particular case of *universal syphilitic lichen with roseola* and *psoriasis plantaris* required 219 pills and a treatment of 36 days.

The total result shows that iodo-mercuro-hæmol cannot be substituted for the more active ointment or injection treatment, but *no* internal application of mercury whatever is capable of competing with these.

We must not forget, however, that mercuro-iodo-hæmol is the first preparation in existence which contains mercury and iodine, together with iron. Consequently we are in its case in possession of a specific *and* a tonic at the same time.

Ferrum iodatum does not approach it in action.

The mercuro-iodo-hæmol is therefore indicated in cases of paleness of skin, marasmus and combined scrophola and syphilis.

REPORT OF THE COMMITTEE ON DISEASE.

BY M. R. TRUMBOWER, Chairman.

Read before the United States Veterinary Medical Association.

(Continued from page 487).

ILLINOIS.

In my report of the disease that came under my observation during the past year in the State of Illinois, I will make my remarks as brief as possible, as I wish to take up some little time on one special disease.

In speaking of glanders, during the past year we destroyed 143 horses and mules affected with glanders, or farcy. Of this number 32 were cases discovered in three of the street car barns in the city of Chicago. During the month of May we made an inspection of all the street car horses used in the city of Chicago. We inspected 5,375 of them, and found the disease existed in three of the barns, 955 of which are now under quarantine restriction. About two weeks ago we discovered the disease in two stables along the drainage canal, in one of which there were seven out of ten affected. The average pay for diseased horses during the past year has been

about \$20 per head. Outside the city of Chicago I think the disease is on the decrease from year to year. We believe that in allowing the owner some compensation for diseased animals that it aids us very much in obtaining reports of suspected cases, and incidentally in discovering exposed animals which we are thus enabled to quarantine, and prevent any further spread of the disease in that locality. In the large cities it is often very difficult to obtain any history concerning the diseased animals, or direct exposures to them, while in the country districts we seldom meet any difficulty in obtaining all the information that is necessary for the proper protection of the community.

Cerebro-Spinal Meningitis.—In the past year I have found this disease existing in two different stables. In one of these six out of seven died, and in the other four, all the horses the owner possessed. The stable was in bad condition for disinfection, so I destroyed the two horses that were still living in the barn, set fire to it and burnt the horses with the barn.

Spasms of the Larynx.—This occurred on one farm last year, the owner losing five horses in about six hours. The cause was entirely obscure. All the surroundings appeared in an excellent hygienic condition.

Texas Fever.—Four cattle died last fall with Texas fever that were infected by some Southern cattle that broke out of a car on the railroad track. The car had caught fire, and one carload of cattle escaped, roaming over pastures and cornfields. The neighbors got after them immediately and drove them into a man's yard where they were held over night. On the following day they were again loaded and shipped to market. About three weeks later the owner of the farm on whose place the cattle were held over night, lost two of his cows within forty-eight hours after the first evidence of sickness. Subsequently, two more died. Last month an outbreak occurred in Brown County, among cattle that were shipped by boat from East St. Louis and unloaded in Brown County and distributed on three different farms; sixteen of this number died. Four native cows that had crossed the

trail of these cattle, died about three weeks later. Forty-one head of the eighty-five that were shipped from St. Louis were sent to the Chicago market for sale. None in the bunch had yet shown any signs of disease, but the owner became alarmed when he heard some of the other cattle had died, and he thought it would be safer for him to market his. When they arrived in Chicago they were placed in the Texas division, and I was immediately notified. Next day we took them to the slaughter-house and killed them under my inspection. I found seven of them showing lesions of the disease, five of which were so bad that I condemned them as unfit for human food. Two others I condemned for being very badly affected with distoma hepatica.

Anthrax.—There were only two cases of death by this disease reported this season.

Intestinal Worms.—The disease caused by the strongylus tetracanthus and the strongylus armatus seems to be increasing in this State year by year. Last fall and winter there were probably 200 deaths that have been reported to me, caused by these parasites.

Rabies.—I have had two reports of outbreaks of rabies among horses, cattle, and dogs, but I had no opportunity to make a personal investigation. I have reason to believe that at least one of these reports was true. In connection with this subject I will present an abstract from a letter written to me by Dr. A. H. Baker, of Chicago:

"The only thing in practice that I can think of, of interest to you, is a very prevalent disease of dogs that we call diphtheria, but it is a question in my mind whether it is properly named, for there is an absence of any diphtheritic membrane. The dog is attacked with high fever, rapid pulse, and loss of appetite. On the second day the lower jaw begins to drop, and drops more and more from day to day. The visible mucous membranes, especially that of the mouth, are at first injected and become livid on the third day, with inability to swallow at that time. They rapidly grow worse and die from collapse at the end of the fourth or beginning of the fifth day. There is no delirium, no inclination to bite or gnaw. Inocu-

lation fails to communicate it to other dogs, yet it runs a perfectly definite course and ends fatally in every case. Dr. Lagorio says it is rabies, but I cannot see a single symptom of that disease in them."

Cornstalk Disease.—My personal attention has been called to only one outbreak of this disease last winter.

Last fall, during the dry season, a report reached me from Franklin County that some contagious disease existed at Pitts Hill. On my arrival there I discovered that one man had lost three out of four horses in about three weeks' time. They reported falling off in flesh, limbs became œdematous, and they were very much debilitated. When they got down they were unable to arise, and died without indicating much, if any, pain. They were pastured in an orchard on high ground, but the pasturage was short. They obtained some green fodder, and went to a well at the bottom of a hill in which a little stream of water drained, coming direct through a hog lot where about twenty hogs were wallowing in this stream. I drew up some of the water from this well, and the stench was so strong that I did not think it possible that a horse would drink it. While I was there a neighbor led two of his horses up to the trough, drew some of the water, and the horses drank it with avidity. He stated that he had just recently commenced watering at this place, for the reason that his well had gone dry. I warned him of the danger, and he seemed to appreciate it, and said that he would not water there again. I attributed the death of these three horses directly to this polluted water.

Actinomycosis.—This disease during the past year has not been any more prevalent than in former years, nor do I think that it is diminishing. I have received numerous reports of isolated cases throughout the State, asking for advice. Occasionally some farmer, or feeder, will report three or four, or even more cases in his herd. One prominent feeder of Cass County, whom I recently met, told me that during the month of May about twenty cases appeared in his herd, but they were all of them local affections—loose tumors about the neck and jaw. He shipped seven of the worst cases with

two carloads of cattle to Chicago, and the inspector held four of them for post-mortem examination. Three of these I passed in the slaughter-house, and condemned the remaining one. I found one affected internally, having actinomycotic tumors in the liver. On the 23d day of July, last year, the State Board of Live-Stock Commissioners, in connection with the Live-Stock Exchange at the Union Stock Yards, Chicago, adopted rules and regulations for the examination of all cattle that come into these yards that manifested any suspicion of being affected with the disease. The State put an Assistant State Veterinarian there, whose duty it is each day to examine, at once, all cattle that are reported to him by the various commission firms. He has four men with him to assist in tagging, driving, quarantining, and keeping the records. From the twenty-third day of July, last year, until the first day of September, this year, he examined under this rule, 9,295 head of cattle; of this number he passed 6,578. Cattle that he passes have a passed tag put in their ear, as evidence to any purchaser that the animal is fit for any market purpose, hence the owner obtains full value for such an animal, while before this rule went into effect the majority of these cattle were purchased by the professional lump-jaw dealers at less than one-half their actual value; 2,717 were held for post-mortem examination. All of these I inspected at the time of slaughter, and condemned out of this number, 2,004, leaving a balance of 713 to go on the market as healthy beef. Out of this number that I condemned in the slaughter-house, 127 were condemned for being tuberculous; 50 on account of being excessively emaciated; 18 were affected with cancer; 9 in an advanced stage of pregnancy; 9 that had gangrenous abscesses; 13 were condemned for excessive bruising. The State Board also has an agent at the East St. Louis yards, and during this same period he condemned and killed forty-three head. This system has proved eminently satisfactory to the shippers, the commission men, and the State Health Authorities, and I believe the State Board of Live-Stock Commissioners of Illinois have reason to congratulate themselves on the efficient work that they have inaugurated.

Tuberculosis.—This State has not taken much action looking towards the control, or eradication of this disease. Only in a few instances, where special demands were made by the owners of suspected herds, and who agreed to abide by the decision of the Board and the veterinarian, was obtained aid from the State in the examination of their herds. We used the tuberculin test on one herd of twenty-one head; nine of them reacted and we killed them under my inspection. Each showed lesions of the disease; seven of them, however, so slightly as to justify their sale for beef purposes. Another herd of nineteen head, which had not been tested by the tuberculin test, were destroyed under my inspection; seven of them were diseased, five of which were condemned as unfit for consumption. In the month of July we used the tuberculin test on a herd of 132 head of cattle, belonging to Mr. H. B. Gurler, of De Kalb, who is one of the leading dairy-men in the State. He had taken special pains to weed out his herd, for a number of years, of all objectionable animals—of all cows that did not give a sufficient amount of milk to be profitable. He had been watching his herd very closely for the last two or three years, being fearful that this disease might possibly develop, as the majority of his herd were high grade Jersey cattle. Last spring one cow manifested signs of sickness, became emaciated and debilitated. He employed a local veterinarian, who diagnosed tuberculosis. Mr. Gurler then made application to the State Board to give him aid and advice in making the tuberculin test on his herd. The test was faithfully carried out, covering a period of about two weeks, with a sufficient number of assistants to observe the necessary rules. The tuberculinum Kochii was used with the surprisingly satisfactory result of obtaining five reactions of from two or more degrees increase of temperature, and two with a lower degree that may be considered doubtful. The five included the cow that had been sick for the previous three months. She died three or four days before we made the post-mortem examinations on the remaining four. She was in a very bad stage of tuberculosis; one lung being almost entirely occluded with deposits. Of the other four,

two of them were tuberculous, one of which manifested it only in the bronchial lymphatic glands, while the other one had tuberculous deposits in the liver, the mesenteric glands, and the peritoneum was studded with tuberculous nodules. The other two failed to present any tuberculous lesions whatever. This whole herd will be re-tested in the course of two or three months from now, to make it absolutely certain that no suspicious animal is allowed to remain in it. We made a few other tests on a small scale, but they are not of sufficient importance to make mention of here.

Influenza.—Influenza has been quite prevalent in many sections of the State, and in several of the larger towns assumed a severe type, with many complications. Especially was this the case at Quincy, as reported by Dr. J. Pease.

Dr. Ditewig, of Canton, reported that he had six cases of tetanus in the month of June.

Aside from these diseases mentioned here there has been no very prevalent disease in the State during the past year, with the exception of one, the history of which I will now relate. It is a very anomalous disease to me. I have been unable to find anything in literature that corresponds with the history of this outbreak, and I am at a loss to account, in a satisfactory way to myself, for the cause of it.

During the month of January last I received a number of letters from various sections in the southern part of the State, describing a disease which affected their mules and horses, and asking for advice. I did not give it very much attention, as from the description I believed it to be some local disease that was not fatal in many cases, and was probably due to improper feeding and care. But similar reports continued to come in until the early part of March, when the State's Attorney of Clinton County addressed me a very urgent request to come to their place and investigate the disease among horses and mules which was proving very fatal. I arrived at Carlyle on the fifteenth day of March, and proceeded to make inquiries concerning this disease. I spent two days in the village, meeting a great many farmers that were coming in from the surrounding country; nearly every

one with whom I conversed reported that he had some animals affected in the earlier part of the season, some of which recovered, and others died. I experienced considerable difficulty in finding any recently developed cases, although I was shown a number of horses on the streets that had been affected, and were still showing some evidence of sore and chapped lips. It appears that a few cases occurred early in the fall, but this outbreak did not become serious, or attract particular attention until after New Year. I traced up 67 deaths of horses and mules within a radius of five miles of Carlyle, and the reports of several hundred that had been affected. In fact, nearly every farmer had some experience with the disease, many animals after having apparently recovered from the first attack would have a recurrence. Some of them in this manner were affected three or four times.

It was difficult to get a very exact history of the appearances, either ante or post-mortem, as the statements were so conflicting that I was compelled to sift out the most reliable statements and accept them. In the majority of cases the animals were affected locally. The first manifestation was a soreness about the lips and nostrils, the skin would become more or less excoriated, and become chapped, cracks and fissures forming without much swelling, in many cases interfering with prehension. The mucous membranes of the nose, and the inside of the lips became tumefied to some extent, more especially those of the anterior nares. Hence, many of the cases were reported as being suspected glanders. Not uncommonly, there would be more or less hemorrhage from the nostrils, and a petechial discoloration of the membrane. In very few instances was there any tumefaction of the sub-maxillary lymphatics. A smaller percentage of cases manifested some difficulty in swallowing, and occasionally in chewing their food. Emaciation and debility gradually progressed, but the appetite never became entirely suspended. Occasionally one manifested evidences of suffocation for twelve or twenty-four hours before death, either as a result of laryngeal or pneumonia congestion. Others lingered along for from seven days to four weeks before death occurred. A

few cases were described to me as having shown colicky symptoms after three or four days, with slimy passages from the bowels. Only in a few cases were there any anasarcaous swelling about the limbs or abdomen. I think I am safe in stating that two-thirds of the animals that died failed to manifest any acute suffering at any period of the disease, or manifested any plain evidence of acute disease of any one or more organs. In animals where the disease remained confined to the skin about the mouth and nose, relief was almost immediately obtained by using some bland ointment on the sores.

Under such simple treatment as that they readily healed up, but they would recur very soon after the treatment was abandoned, unless at the same time a change of feed was introduced. I think I have succeeded in tracing it to the feed that these animals obtained, or something ingested in connection with it. The drought in that section of the country was extreme last fall. The hay crop was an entire failure. The farmers were compelled to winter their horses on corn fodder, straw, and cut oats. The oat crop was very light, yielding from 5 to 15 bushels to the acre; the straw was light and immature. The corn fodder, to a very large extent, was cut and gathered in bundles, and fed to the horses in the stables after the corn was husked out. The wheat crop was very good, and all the farmers had plenty of wheat-straw for feed, which was invariably stacked out doors as it came from the machine. In the fall, soon after oat harvest, after the pastures gave out entirely, most of the farmers commenced to cut sheaf oats, feeding about a half bushel of these oats, "hexel" as they called it, once or twice a day. Three bundles of these oats cut up, would make a bushel, so the feeding qualities of this amount were very meagre. About the holidays four-fifths of the farmers had fed up all their oats, or "hexel," and were compelled to turn their horses to wheat-straw stacks and corn fodder. Now all the farmers with whom I talked that had fed mixed feed, bran, oil cake meal, or ground corn mixed with their "hexel," or mixed with cut wheat-straw, suffered no loss from this disease, although many of their horses became mildly affected; while the farmers who relied

upon the corn fodder, and the wheat-straw for maintenance, lost horses with this disease; one instance in particular, the history of which attracted my attention, was related to me by Mr. McCully, one of the most progressive farmers in that community. He lost six animals with this disease, and had five remaining, all of which had been affected three or four times. The first one became affected while he was feeding corn fodder in the stable. It died in about a week, at which time the second one was showing signs of the disease. He then took his horses out of the barn, cleaned up all the manure and accumulations under the mangers, hauled in some fresh dirt, and left the stable empty for several weeks, in the meantime feeding his horses in the yard on fodder thrown up in the hay rack. After awhile he discontinued feeding the fodder in this manner, but threw it out on the ground to these animals. A few days later some of them commenced to manifest disease about the nose and mouth. He then took them back into the barn, but lost one more before the remainder recovered. He then ceased feeding fodder and fed them on ear corn and wheat-straw. They seemed to do well for a time, and he thought all danger was passed and commenced to feed fodder again, when the disease recurred as before. Now this is the history that was practically related by every one, with the exception that some attributed it to the feeding of wheat-straw, while others thought it was communicated by fodder only. My first impression was that it was due to some rust or mould fungus that grew upon vegetation the past season, but as there was such an entire absence of mycotic gastritis, or enteritis, I could not make up my mind that this was the ordinary form of disease resulting from such causes only. It appeared the animals that were furnished the smallest amount of nutritive food substances were the ones that became fatally affected, indicating, that the impoverished condition of the system was unable to resist this disease-producing cause.

(To be continued.)

TUBERCULOSIS.

Address delivered by Dr. JOHN FORBES, of St. Joseph, Mo., at the regular meeting of the Missouri Valley Veterinary Association, October 2, 1895.

Much has been said and written recently in regard to the subject of tuberculosis, and to many it may seem a re-hash to consider it again. When, however, we know that a great proportion of the deaths in the human family are due to tuberculosis, that the disease is common to man and the lower animals, and that its existence in the animals that maintain the food supply of man is a menace to public health, and when we consider that the veterinarian must be the guardian of the public health in this respect, I think you will agree with me that it is a subject that cannot be too often considered. I regret very much that other duties have prevented me giving the attention to the subject that it demands, but what follows I trust will evoke a hearty discussion of the subject. In laying it before you for discussion and your consideration, I wish only to emphasize a few of the most important features of the subject. Koch's discovery effected a complete reformation in the clinical views of tuberculosis. All sorts of theories prevailed previous to that. Clinical medicine reconstructed itself to comply with the views imposed by the discovery.

Of the various points in the subject none seem to be more assailed than heredity. There has been no direct proof of the inheritance of the disease, but it is a clinical fact, nevertheless, and one of almost daily experience, that the disease reaps its harvest among the offspring of tuberculous parents. When the disease appears at an early age the hereditarians believe that there has been an hereditary infection instead of an early direct infection.

There are many ways in which the young can be infected. Close contact with a diseased mother or other diseased animals, and the contamination of the food with sputum containing the bacilli. Milk, however, in the human subject, is the most frequent source of infection, and it is surprising how little the general public are enlightened upon this sub-

ject. They recognize that the disease exists in the beef supply, and they consider a rigid inspection of meat a matter of necessity, but they seldom think of the dangers lurking in one of the most universal articles of diet. Even in intelligent families too little attention is paid to the source of the milk supply for children. It may be that the fear of infection by milk is exaggerated, but one can hardly think so when we hear of the frequency of tuberculosis of the mesenteric glands in the young. It is obvious then that a great responsibility rests upon those who have the supervision of the health of children.

There are other methods by which infection may take place and which may simulate hereditary transmission. A diseased progenitor may contaminate the stables or utensils and impart the disease to the young, and the less space allowed to animals, and the closer they are confined, increases the danger.

While we cannot believe in hereditary transmission, experience shows that the offspring of tuberculous progenitors sooner or later manifest the disease when exposed to the exciting cause, and we also know that nurses and attendants in consumptive hospitals, while exposed continually to the danger of infection, very infrequently contract the disease. We are thus compelled to acknowledge that a healthy body can resist the attack of the bacillus, and that the bacillus in order to flourish must have a suitable pabulum. Vigorous parents will bestow upon their offspring a vigorous constitution, and weakly parents bestow upon their offspring their habits of body. In this bestowal of a weakly habit of body to the offspring we may find an explanation of the theory of heredity.

But it matters not if we do have this weakly constitution, the bacillus is an absolute necessity to the propagation of the disease. The bacillus of tuberculosis is not ubiquitous. It exists only in the immediate vicinity of a tuberculous patient, hence it must exist plentifully in the popular resorts for consumptives, and we must conclude that when the resorts are well patronized by tubercular people, they are dangerous places for delicate persons.

Besides this inherited weakness of the system, this so-called "tubercular diathesis," there are other influences which may reduce the organism to the state suitable for the propagation of the bacillus.

In cattle the most potent influences are overcrowding, and excessive milking, a very common occurrence in city dairies; and let me impress upon you the fact that a phthisical attendant of dairy cattle may be a source of danger, not only to the health of the cattle, but to the public who consume the product of that particular dairy.

The city that does not have a scientific supervision of the source of its milk supply lacks in its duty to its citizens.

There are cases on record of a phthisical patient which imparted the disease to chickens in the yard, who devoured his sputa; of another who inflicted the disease upon two pet dogs in succession, and would have given it to the third had the patient not died before it could be effected. If that can be said of these animals, might not the same be true in regard to cattle? Even if it were not, there is always the danger of the milk becoming infected through the dried sputa of the diseased attendant, and we all know that milk is one of the most frequent habitats of disease germs.

We have seen that the bacillus must find entrance to the body before we can have tuberculosis, and it may be of interest to us to know how it gains access.

Infection through wounds has often been recorded, and in such cases the process of repair is retarded, the infective process spreads to the adjacent glands, and ultimately results in general tuberculosis. Fraenkel relates that this had taken place in surgical operations.

Through the alimentary canal infection often takes place by the ingestion of contaminated food. Being able to resist the action of the gastric juice, the bacilli readily gains entrance to the abdominal glands.

The most frequent point of entrance of the bacillus is the respiratory tract. As with the other methods of infection the same conditions do not prevail in this instance.

The substance that contains the bacilli must first dry up

and be reduced to a powder, and the bacilli be lifted into the air, from which it is inhaled. Only such bacilli as withstand the drying process can enter this way, and it must be remembered that the tubercle bacilli has a great power of withstanding this drying process. This theory, as against the other, that the bacteria free themselves from where they are contained and are carried upward by the air or by evaporation, has been clearly proven by a series of beautiful experiments related by Fraenkel in his book on bacteriology.

Dust collected from a dwelling where dwelt a phthisical patient produced tuberculosis in a guinea-pig. Dust taken from a place where there was no consumptive produced negative results. It was found that the dried sputa found in the pocket handkerchiefs of consumptives was a prolific source of the bacteria. As I have already indicated, every consumptive is a source of danger to the health of animals as well as to the people around him.

The bacilli having gained access to the body by reason of their biological quality, they originate an irritation resulting in a true inflammation. It is then that a struggle between the cells of the tissue on the one hand and the bacilli on the other takes place, and the result is determined by the vitality of the cells or the infectiousness of the bacilli. Should the cells conquer, the bacilli are destroyed before they can do any injury, but if the bacilli conquer, the result is well known.

It may interest us to glance at the theory of phagocytosis. Phagocytes are formed of leucocytes and fixed connective tissue cells. They are of two kinds, the large and the small. It seems to be the duty of these elements to fight the battle on behalf of the organism against the invasion of the bacilli. As soon as the irritation is set up they hasten to the battlefield, and the fight is on to the death. The phagocytes endeavor to devour the invaders, to digest them and render them sterile. It seems that certain bacilli do not require the whole force of the phagocytes. For instance, the streptococcus of erysipelas can be overcome easily by the small phagocytes, as can other micrococci; but in the case of tubercle

bacilli, both the large and the small phagocytes take part in the fray, evidently proving that the bacillus tuberculosis is a formidable adversary. I bring this theory to your notice in the hope that we can elicit some discussion on the subject, as I have never heard the question considered from this point, and I hope to gain some information from it.

CONTRIBUTION TO THE STUDY OF SWINE PLAGUE, HOG CHOLERA AND PNEUMOENTERITIS OF SWINE.

By Dr. W. SILBERSCHMIDT.

(Continued from page 429.)

MORBID SYMPTOMS AND LESIONS OCCASIONED BY THE TWO MICROBES.

Let us study first the local reaction.

The subcutaneous injection of culture or of blood of *swine plague* gave but a slight local reaction. Generally, I made the inoculation of the virus at the ear so as to appreciate the effects better. Fresh rabbits offer a very slight local reaction; after a few hours there is light hyperemia, more and more localized. This is still present at the post mortem, as well as is a local slight oedema. Upon section one observes a little serous liquid slightly cloudy, and the microscope reveals the presence of a large number of bacilli with leucocytes varying more or less in quantity.

This local reaction, so slight upon fresh rabbits, was very extended upon vaccinated rabbits, and especially in those which did not resist to the end. Animals which were well vaccinated presented at the point of inoculation an oedema containing after one or two days a thick pus with abundance of white globules and microbes, these diminishing in number after a few days, though the abscess was still present. The better the vaccination was done the smaller the abscess remained and the quicker it disappeared. Rabbits which by preventive treatment had been but partially vaccinated, presented about twenty-four hours after the injection, an oedema involving the entire ear, which was then drooping, and in-

creasing during the following days and until death occurred. Often the stretched condition of the skin was such that tearing would take place, from which sero-bloody fluid would escape. I have even at times observed the formation of vesicles on the surface of the ear, swollen to the maximum, which I think were due to trophical disturbances produced by the pressure upon the nerves. If life lasted more than five or six days the œdema would increase, as we will see further on.

As to *hog cholera*, the subcutaneous injection of virulent cultures in fresh rabbits was generally followed by a local reaction much more manifest. There was formation of abscess, the ear was drooping, and, as in *swine plague*, the longer the disease lasted the greater was the œdema. When the virus was stronger the local reaction diminished, and much resembled that seen in *swine plague*; vaccinated rabbits offered the same local lesions.

As morbid symptoms of acute cases of the diseases, one must mention, before all, the elevation of temperature, appreciable two or three hours after the injection, and likely to rise to 42° or 42.5° . Afterwards, the animal is taken with diarrhœa, often severe in *hog cholera* until death. By degrees a progressive paresia occurs in the posterior extremities. Death, which takes place in a variable time, as we said above, is preceded by a short period of extensive spasms, and often the rabbit gives an acute cry as he dies.

As to the lesions observed at the autopsy, they were equally analogous in both diseases. The small intestine contained a serous liquid; when drained off with a sterilized pipette, one would after a short time observe, especially in *hog cholera*, a more or less abundant deposit formed of solid particles, and over it a liquid slightly colored and transparent; the contents of the intestines gave a pure culture of *bacterium coli*, having a great analogy to the microbe injected. Peyer's patches were tumefied, but I have not seen any ulcerations. All the mesenteric vessels were dilated and gorged with blood. Another constant lesion is also observed, viz., the increase in the size of the spleen, and its being more

marked in the cases of *hog cholera*. The kidneys, highly hyperemic, presented no microscopic lesions. The bladder was almost always empty. Nothing abnormal in the other organs.

The blood, as well as the various viscera (spleen, liver, kidneys), contained numerous microbes, their number being often much higher than that of the blood corpuscles. Simple coloration with the blue of Loeffler, with the aqueous solution of the methylene blue and the thionine, as well as the double coloring with eosine and Loeffler blue, has given handsome preparations. I have made at each post mortem the examination of the blood and that of the cultures, one on gelosis and the other on bouillon.

The lesions that I have just described are those that are seen in fresh rabbits, dead one or two days after the inoculation.

In the cases where the disease lasts several days, either on account of the weak virulency of the injected liquid, or because the rabbit is only incompletely vaccinated, various other lesions are seen, but not with the same constancy.

The peritoneal serous is strongly injected, and at times presents, especially in the inferior region of the ascending colon, numerous small ecchymosis, which are not so frequent in the small intestine.

In the cases of extension of the local œdema of the ear, the surrounding part of the poll or of the face was ordinarily tumefied and presented a large subcutaneous abscess; in several instances I found a purulent pleurisy on the side corresponding to that of the injected ear, with small abscesses in varying number in both lungs, and with partial hepatization of the pulmonary tissue, principally in the inferior lobes. Cultures with these abscesses or the liquid of the pleuro were always pure.

Once or twice, in cases progressing very slowly, I have seen with the pleurisy a purulent peritonitis, and I have also found, though seldom, it is true, a sero-fibrinous peritonitis.

The presence of miliary abscesses of the liver was noticed four or five times, and twice did they exist in the spleen.

It remains for me to mention two cases where the subcutaneous injection of virus in the abdomen, on rabbits on the road to vaccination against *swine plague*, had occasioned death by the extension of the local abscess to under the skin of the abdomen, of the thorax and of the back.

The brain, examined on several occasions, presented no lesion.

In the cases of acute intoxication the symptom, diarrhœa, was present as after the injection of virulent culture; often, especially after injection of toxine of *hog cholera*, there was also tumefaction of the spleen. In chronic cases, by opposition, one would notice loss of flesh, cachexia, marked diminution in the size of the stomach, and especially an atrophy of the spleen, often excessive. Of course, in both cases cultures were sterile.

To resume, the anatomical lesions are analogous in the acute cases of *hog cholera* and of *swine plague*; the more intense diarrhœa and the more marked increase in the size of the spleen are only quantitative differences, perhaps connected with the little longer durations of the disease; they are not sufficient to differentiate *hog cholera*.

The local reaction after subcutaneous injection does not either allow the distinction of the two diseases. At first this reaction is marked in *swine plague*, but we have seen also that in *hog cholera* it diminishes as the virulency increases. Besides, in the cases of partial and incomplete vaccination against *swine plague*, the tumefaction was much larger than with the injection of the virus of *hog cholera* to a fresh rabbit.

From these facts I believe I am authorized to conclude:

First.—The anatomical lesions and the morbid symptoms do not allow the differentiation between the two diseases.

Second.—It is impossible, as done by several authors, to distinguish the two diseases by the lesser or greater extension of the purulent formations, so long as we have demonstrated that, for one and the same disease, one can observe all degrees of local reaction, from the simple circumscribed hyperemia to the generalized abscesses with purulent pleurisy, purulent peritonitis and purulent collections in the lungs.

Third.—In the numerous post mortems that I made upon hundreds of rabbits I have failed to observe a pulmonary localization of the lesions in *swine plague*, or a rather intestinal localization in *hog cholera*.

INFECTIOUS PNEUMO-ENTERITIS OF SWINE.

Mr. Metchnikoff has kindly given me a number of tubes of blood from rabbits dead after the injection of the bacillus of infectious pneumo-enteritis of swine. This blood, kept for more than a year, contained only a small number of living microbes. I obtained a pure culture after an injection of 2.5 c.c. of this blood to a rabbit, and it is starting from this culture that I made my experiments.

To the morphological point of view, the microbe that I have studied presents a great resemblance to my bacillus of *swine plague*: small dimensions, transparent colonies upon gelosis, and no formation of gases in glucosed bouillon in the presence of carbonate of lime. The virulency was weak, less constant, and was nearest that of *hog cholera* at first. With subcutaneous injection it required 0.2 to 0.3 c.c. of culture or of virulent blood to kill a rabbit with certainty. In one case the rabbit resisted an injection of 0.1 cc., and another died after only twenty-two days of cachexia. According to the dose death occurred in eighteen hours, or between two and three days.

The intravenous injection of $\frac{1}{2}$ cc. and more killed between twelve to twenty-four hours in average. The local reaction, which, as we have seen, acts in inverse proportion to the virulency, was always considerable, and was even greater than that produced by the subcutaneous injection of *hog cholera*; the injected ear was always the seat of a quite large œdema, with formation of abscess. At the post mortem the lesions were analagous to the two other diseases.

The guinea-pig dies in from twelve to twenty-four hours after a subcutaneous injection of $\frac{3}{10}$ to 1 cc. of virulent blood; a mouse, which had received $\frac{1}{10}$ cc. of the same blood, died the eighth day.

The toxicity of the sterilized cultures, and of the blood,

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is also very weak; quantities of 2 and 2.5 c.c. were tolerated in intravenous injections without noticeable symptoms; a rabbit, which had received 2.75 cc., presented after forty-eight hours a diminution in weight of 150 grammes.

My experiments were not so numerous as for the two microbes studied previously.

It is much easier to vaccinate rabbits against pneumo-enteritis than against *swine plague* and *hog cholera*.

I have obtained this vaccination by repeated injections: 1st, of small quantities, $\frac{1}{4}$ to 1 cc. of virulent blood more than a year old; 2d, with fresh or aged virulent blood, sterilized to the water bath at 58°; 3d, in one case, with injections of very small quantities of cultures of blood, both virulent.

Here are some of the results of these modes of vaccination:

No. 238.—1k-980; 3 intravenous injections of aged non-sterilized blood. After the third injection of 1.25 cc. great loss in weight (1k-575 the third day). The rabbit recovers and stands two trials of injection.

No. 274.—2k-15; 2 injections of 2.75 cc. and of 2.5 cc. of virulent blood sterilized for an hour at 58°. The rabbit supports three trials; the first without witnesses, that of the third dies within 45 hours.

No. 232.—2k-300; five injections; altogether 8.25 cc. of aged sterilized blood. The rabbit resists the trial injection and weighs 2k-500 a month later. The witness dies with cachexia.

No. 284.—18-IV, 1k-485; injection of one-tenth virulent bouillon culture; large œdema, ear drooping; on the 27-IV, 1k-345; the 21-IV, 1k-580; second injection of 1-40 cc. virulent injection; the 23-V, 1k-800; the 1-VI, 1k-960 a third injection of one-tenth cc. of virulent blood; 11-VI, 2k-135.

No. 255.—27-III, 1k-640; subcutaneous injection of 1-20 cc. of bouillon virulent culture; 28-III, 1k-140; œdema of the ear; 31-III, 1k-690, still œdema; 7-IV, 1k-480, œdema smaller, there remains but a large abscess well outlined; 14-IV, 1k-265; 17-IV, 1k-120. Dead the 18-IV, in the morning. The blood and the cultures remain sterile.

As can be seen by these, the microbe of the pneumo-enteritis of swine which I have used does not differ from the two microbes previously studied except by its less virulence and the small toxicity of its products; it is probable that, as for *hog cholera*, successive transfers by rabbits would have increased its virulency. Cultures offer much less regularity in their action as long as the virus has not reached a certain intensity. I made the same remark with *hog cholera*.

(To be continued.)

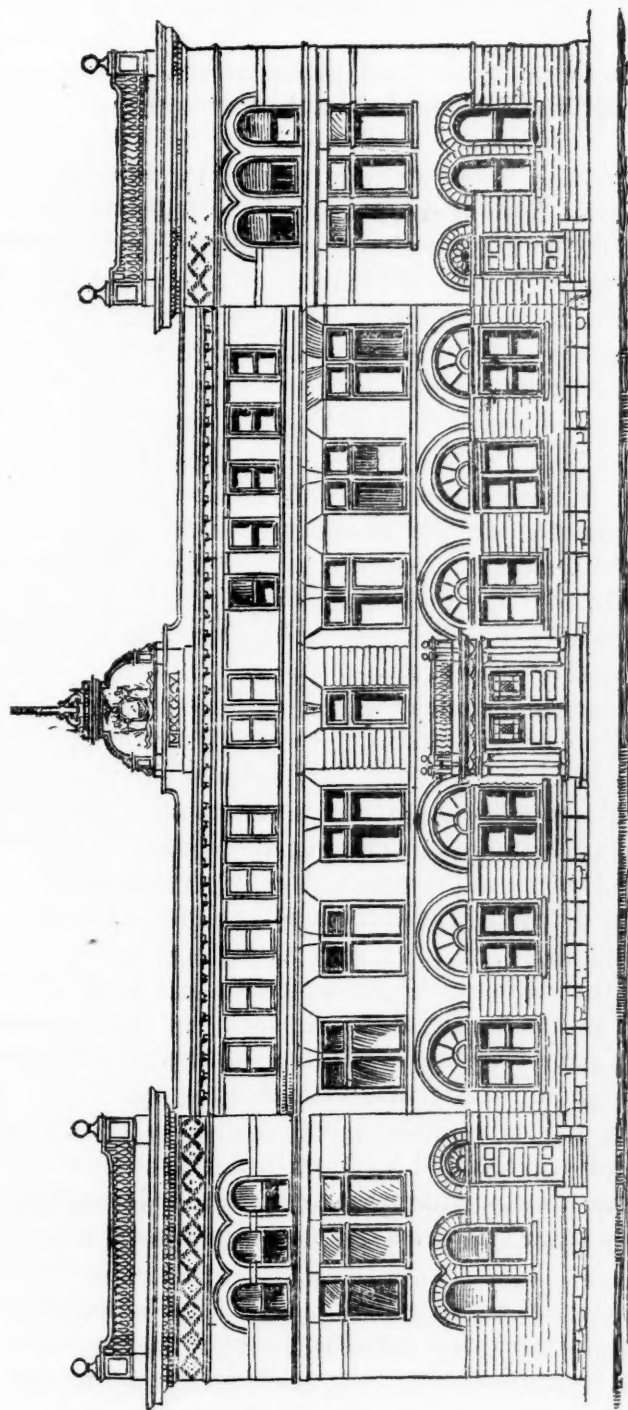
NEW SCHOOL OF VETERINARIANS.

ITHACA, N. Y.—At the two last sessions of the Legislature bills were passed appropriating to Cornell University the sum of \$150,000 for the purpose of building a veterinary college. This appropriation is for the building alone, the State agreeing to the following resolution, which was adopted by the Board of Trustees of Cornell University, June 20, 1894:

Resolved: That the Board of Trustees authorize the location on the university grounds of the State Veterinary College, and express their willingness, when the State shall have made sufficient provision for buildings, equipment, and maintenance, to administer the State Veterinary College in such manner as may be hereafter agreed upon, subject, however, to the condition that the university is not to undertake any part whatsoever of the financial responsibility connected with the State Veterinary College, whether for buildings, equipment, care, experimentation, investigation, instruction, or any other object; though, for the sake of reducing the cost of maintenance to the State, the university consents to furnish instruction to students of the State Veterinary College in such scientific and other subjects as are now or may hereafter be included in the curriculum of the university, upon such terms as may be deemed equitable, regard being had to the fees paid by university students for instruction in such courses.

From this resolution it will be seen that the State is bound to make further appropriations for the maintenance of the college. This will seem just when it is known that the object of the college is not simply to give instruction to students, but also to advance veterinary science, and care for the interests of animal industry in the State. In this respect the veterinary college resembles the College of Agriculture, which is both a department of the university and an experiment station of the State.

The veterinary college group consists of six buildings, as originally planned. The first, the main building, will contain a large museum, two lecture rooms, laboratories, and research rooms for the professors. The second will be known as the operating building, the third as the mortuary, the fourth will contain the general ward for the non-contagious medical and



NEW YORK STATE VETERINARY COLLEGE.
CORNELL UNIVERSITY, ITHACA, N. Y.

surgical cases, the fifth the contagious wards, and the sixth will be a small college for the student groom and his assistants.

The front of the main building will be 139 feet in length, and with a projecting one-story wing the building will be 175 feet deep. Adding to the depth of the main building the five smaller buildings in the rear, the whole college will extend back from East Avenue fully one-eighth of a mile. The main structure will be three stories in height, with a large basement.

The material of which the building is being constructed is yellow pressed brick, with a little stone work. What stone is used will be Indiana limestone and Ohio sandstone, with Gouverneur marble for the finishings and trimmings. The basement is built entirely of Gouverneur marble. The interior will be of mill construction—a slow-burning material, which has been approved by the underwriters for the Factory Mutual Fire Insurance Company.

Every precaution has been taken to give facilities for medical and surgical treatment in the college according to the most recent antiseptic theories. All surfaces affected by contagion will be arranged so that they may be cleansed daily.

Enameled brick and joints covered with patent enamel that resists the action of all chemicals will be freely used. The plumbing and draining will be carefully done, so as to be of the highest efficiency.

Work on the buildings was commenced last July. A large force of men and teams have been at work, and, although only three months have elapsed since the ground was first broken, the walls are up and well toward the third story.

The plans for the buildings were drawn by Prof. Francis E. Osborne of the Cornell Faculty in Architecture. When completed, the college will be the finest devoted to veterinary science in the country.—*New York Weekly Times*.

EXPERIMENTAL PATHOLOGY.

ACTUAL CONDITION OF THE QUESTION OF IMMUNITY.

By E. METCHNIKOFF.

The theory according to which bacteria are destroyed by the secretions of eosinophile leucocytes is refuted by positive facts. The theory of the phagocytes is in harmony with all the facts established since its foundation. The examples which have been claimed as exceptions of the function of the phagocytes, septicemia in mice, diphtheria, anthrax in crustacea and mollusca, after a close examination, proved to belong to the theory of phagocytes after all. The choleric peritonitis of guinea-pigs likewise belongs to the category of infectious diseases in which the anti-bacterian function of the phagocytes is most evident. The phenomena of degeneration of the vibrios in the peritoneal liquid of hyper-vaccinated guinea-pigs, as described by R. Pfeiffer, are explained by an action of the products of the leucocytes, modified by the influence of the hyper-vaccination. The destruction of the microbes in the interior of phagocytes may take place in an acid media, according to the opinion of A. Kossel, upon the action of its nucleic acids. But this destruction can also take place in an alkaline media, in the contents of the phagocytes.

Phagocytes do not react only against the invasion of the microbes, but also in the intoxication of the organisms by various poisons. Their part has been shown (specially by the school of Kobert) even for such inorganic substances as iron and silver. From all the progress made in the last few years, immunity must be considered as the result of a cellular activity. Among the elements which act in immunity the first part must be attributed to the phagocytes.—*Ann. de l'Inst. Pasteur.*

INOCULATION OF MILK COWS WITH CULTURES OF THE
BACILLUS DIPHTHERIE.

By KLEIN.

He has succeeded in inoculating the bacillus of Loeffler to cows which had calved recently, by injecting a moderate quantity of virulent culture in the subcellular tissue of the

shoulder. Ten times he obtained a local swelling, more or less developed; six times general symptoms; five times the appearance of small vesicles on the teats; he has found the diphtheria bacillus constantly in the liquid of the vesicles and twice in the milk.—*Revue des Sc. Med.*

ON THE USE OF MALLEINE IN MAN AND ANIMALS TO THE POINT OF VIEW OF DIAGNOSIS AND OF THE THERAPEUTY.

BY A. BONOME.

The animal which seems the least sensitive to malleine and the most proper to establish its diagnostic value is the rabbit. The cat comes next, the guinea-pig and the dog resist much more.

The injections of malleine to horses cannot be considered as positive means of diagnosis of glanders; the experiments of Bonome, made on 32 horses, agree with the conclusions of the French commission appointed by the Secretary of War. Out of the 30 horses to which an injection of 1 to 1½ c.c. of malleine had been made, 24 showed a more or less severe febrile reaction, 6 did not react. Of the 24, 19 were killed, and, with one exception, all had the manifest lesions of glanders. Of the other five which were not destroyed, one only, by inoculations to guinea-pigs and dog and by cultures, gave proofs of glanders. Thus the febrile reaction that is obtained through malleine is not a positive criterion of the existence of glanders in the horse.

The author has had occasion to treat, with malleine, a case of human glanders. This observation, unique at this day, brings him to the following conclusions:—

1st. Malleine obtained by cultures gives to the man affected with chronic glanders a reaction far less violent than in the horse. Two or three drops are sufficient, instead of 1 c.c., as required by the horse. The intensity of the reaction is proportionate to the dose, but goes on decreasing as the injections are repeated.

2d. Each injection gives rise to an œdematous and painful swelling, which rapidly disappears.

3d. During the days following the injection, the temper-

ature often drops to a very low degree, 35.5° , for instance, and stays there for 24 to 48 hours, without any objective or subjective symptom.

4th. The reaction is accompanied with very abundant polyuria, even with profuse perspiration. The urine is almost always thoroughly alkaline.

5th. The action of the injections of malleine upon the local manifestation of glanders has proved very efficacious.

The author has also attempted to establish the curative value of malleine on guinea-pigs, dogs and horses.

In the first, it is malleine obtained with the aid of the serum of bovines which seemed to have the greatest efficacy. In dogs, the one obtained by the culture of the bacillus in the laboratory, and in horses, that obtained from the serum of fat. A recovery has been obtained in the horse, which, so far, lasts for a year.—*Ibid.*

REPORTS OF CASES.

"I hold every man a debtor to his profession; from the which as men do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto."—*Bacon.*

FOUR CASES OF INGUINAL HERNIA.

S. R. HOWARD, V.S.

CASE I.—Subject, twelve-year old Clyde stallion. Two months before the last sickness this stallion had what was supposed to be a slight attack of colic, which lasted about twenty minutes. I was called, and found him about well, munching hay, and pulse and temperature almost normal.

Groom stated that the stallion had never been sick before, but as soon as he had watered him that eve, he appeared to get colicky and rolled over several times. We watched him about an hour, and then I left him well, as far as I could see.

Two months later I was again sent for. Found him standing with head over lower door of his box, breathing very quick and vigorously. Pulse about seventy-five or eighty;

no sweating or looking at his sides. He would stand thus for about ten or fifteen minutes and then turn quickly around several times and rub his rump vigorously against the wall. This was done by turns for at least two hours. Then he took a notion occasionally to lie down and roll completely over very quickly, get up, shake himself, and then appear much better for a few minutes.

This horse was naturally very restless and often vicious. I could scarcely approach him, much less handle him, because of his disposition to bite and kick. Twitching made him worse. In order to give him rectal injections he was put in a very narrow stall and a gate placed behind him, and a pole on his side. Could not drench him, and in an attempt to examine his scrotum I hurt my arm severely against the pole. If I had to do it over again, I would throw him and then examine. At intervals I gave him hypodermics of small doses of morphine and soap-suds injections containing some sulphuric ether. Several times he was exercised at end of a pole. He did not lie down more than four times altogether, neither do I recollect of his looking around at his sides until death was upon him. He passed manure several times in normal quantities, and urinated very frequently in very small amounts and in strong spurts.

At 2 A.M. I examined him per rectum, very unsatisfactorily on account of his restlessness. After midnight he began to sweat in the flanks, and got very restless, and once in a while kicking with one foot. Still he had intermissions of ease, and, what I especially wish to record, he never sat on his haunches, or looked at his sides until a few minutes before he died.

I was sure of some structural change, but had no definite idea as to what it was save that it was urino-genital in character. One testicle appeared slightly larger than normal. I managed to get hold of it but discovered nothing wrong. I admit my examination was at fault, but I did the best I could under the circumstances. When attempting to do anything for him he would act with the violence of a case of phrenitis.

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After two o'clock A.M., he stood with head pushed into a corner, breathing very deep and rapidly, sweating profusely, never leaving corner or growing any easier until only ten minutes before he died, ten o'clock A. M. He then staggered back, sat on his haunches a few minutes and died.

His sufferings and struggles at pushing his head against the wall were terrible to see. I attempted several times to chloroform him with sponge on stick, using chloroform and sulphuric ether, but with only slight effect toward relief.

The absence of several symptoms of this case are remarkable. The loss of feeling and symptoms of gangrene were never present. That peculiar motion of the head indicative of recent inguinal hernia, and the later extreme prostration were also absent.

I suspected hernia, but rather thought it to be something else, and on opening him expected to find considerable change of some kind, but did not know what exactly to expect. I found, to my surprise, everything apparently normal, save near the stomach, about six inches of small intestine, black as coal, slightly smaller than the rest and containing one-half of fæces. I will add, right here, that I was at sea and did not suspect it to be a previously hernial intestine displaced by handling carcass after death. This, of course, is what it was.

CASE II.—Subject, large draft stallion, eight years old. The owner, who is a good horseman and blacksmith, at noon turned the stallion in paddock for exercise. At supper-time he found him apparently all right, except slightly lame in one hind leg. He examined foot and fed him his usual feed, of which he ate some, but mincingly.

About dark, owner heard noise among his stallions (he kept three), and in looking in he found this one sitting on his haunches, looking around at himself. He sent for a Quaker, who does considerable doctoring, and about midnight I was sent for.

I found him down, easy, but near death. Pulse one hundred and fifteen over heart, cold, unable to rise, temperature ninety-eight degrees; refused to operate; died in eight hours from time severe pain set in.

Shortly before death took place he arose, staggered for a few minutes and fell dead. Found about fifteen inches of small intestine in inguinal canal and scrotum.

CASE III.—Subject, large draft gelding, six years old. Several months before, I had examined him for owner, to decide the nature of an enlargement in groin. I diagnosed small chronic inguinal hernia, and suggested an operation. The owner, a very penurious old gentleman, would not admit of such a "cruel operation." Owner said the horse passed manure very frequently, but only a ball or two at a time.

Several months after this I was called in the night to see same horse. Found him presenting all the symptoms of strangulated inguinal hernia, pawing, sitting on haunches, perspiration on face and in groin, assuming position on back, kicking at belly, stamping violently, etc. The hernia was very tense.

I diagnosed strangulated inguinal hernia. I gave him a big dose of chloroform in oil, and threw him. The hernia to the touch seemed to contain more gas than anything else. Introduced small trocar and canula to allow gas to escape from imprisoned intestine, but with signal failure.

I then manipulated per rectum and externally at same time for about half an hour, with no effect. Then informed owner nothing would do any good but an operation, and that the immediate and urgent interference was indicated. This the old gentleman refused to listen to and declared he believed the horse only had colic anyway and asked me to stay with the horse for an hour or two and treat the horse for colic.

I stayed until midnight, but seeing the horse was getting worse all the time, and the owner positively refused to let me operate, I left anodyne medicine to be given, and went to bed with the confidence that the horse would be dead in the morning.

At 7 A.M., to my astonishment, he was no worse, but acting just the same. Owner would not listen to the suggestion of an operation, but requested rectal injections and colic medicine be given; this was done. Told owner I wanted him to get some one else to doctor his animal. He said he

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would take him to his farm (one mile distant), and doctor him himself, and this he did.

The horse lived three days and nights, and I was told he died without a struggle. They drove him at a trot all the way to the farm and put him in a large roomy shed, where he staid until he died. After there a while he appeared better, ate nothing, but drank quite a number of buckets of water.

I opened him within an hour after death; the carcass had not been moved. I found a free portion of small intestine about a foot in length, slightly injected and contracted, and in my judgment it might have become normal if the horse had not been killed by dosing with everything the neighbors and the imagination of the owner suggested.

I think the bowels had been released several days. There was no peritonitis. Now here was a case of hernia undoubtedly partially strangulated for several days at least, and had reduced itself, and, what is strange to me, it had not adhered in scrotal sack, it being a chronic hernia. The inguinal ring was dilated. He died from the effects of a quart of oil, etc., being poured into his lungs by nostril.

CASE IV—Subject, six-year-old trotting stallion. In about a year before his last sickness I had been called several times to see him, but each time he appeared to be well by the time I reached him. They said he appeared to have colicky pains, roll over, paw and have intermissions of ease.

The last time he was taken they sent for an authority, who claimed the horse only had colic. Next day, at noon, I was summoned, but when I saw the poor brute I refused to operate, for it was plain he was under the anæsthesia of death. He died in an hour from the time I saw him.

I found a small loop of small intestine inclosing one ball of dung imprisoned in the inguinal canal. No indication of chronic hernia. The very small knuckle of the loop distended with gas was outside of external ring.

The report of these cases I trust may be of some benefit to some earnest practitioner who may profit by my experi-

ence, for they are not like some I know of, they are truthfully related.

The report of odd and fatal cases accompanied with accounts of post-mortem lesions can not help be of inestimable value to busy and conscientious practitioners.

For myself, I am perfectly willing and glad to wade through long, vague articles about antitoxins, tables of temperatures, emulsionized gelosis in bouillon, c.c.s., immunity of inoculated rabbits and mice, sterilization, streptococci, anatomy of parasites, etc. But, after all, one cannot help but think how little such news helps a practitioner practically.

The advantages of a higher education no sensible man denies, and I have no fault to find with it, but why can we not have more practical articles, reports of cases and points in practice than we have hair-splitting articles filling up our journals most of the time. Still let us gladly welcome any and all original research.

In the last ten years, not counting the present volume, the AMERICAN VETERINARY REVIEW, the leading veterinary journal of America, has printed about three hundred cases reported by subscribers and four hundred and fifty original articles, many of which were translated productions.

Should this proportion continue to obtain? Who is to blame? Surely not the able editor. Looking over back numbers of the REVIEW, it is seen sometimes only one little case occupying about half a page.

If it had not been for the adamantine determination and tireless energy of Prof. Liautard, who in the face of tardily paid subscriptions and needy encouragement, we could not have with us the ideal AMERICAN VETERINARY REVIEW of to-day. At the same time credit is due to his colaborers.

It is said experience is the greatest teacher of all. Let us have some of it.

"The stream of life bears with it now all the errors and failures of the past, the wreckage of all the philosophies, the fragments of all the civilizations, the wisdom of all the abandoned ethical systems, the debris of all institutions, and the penalties of all mistakes."—*Sumner*.

FATAL INTESTINAL HEMORRHAGE.

BY THE SAME.

Subject, Rene, 2:26, sire of Belle Archer, 2:12³, and other trotters.

On 15th of Oct., at 3 A.M., groom heard struggling in barn and upon investigating found the above subject on his back with feet against box-stall door. He turned him over and he then got up and went to eating and appeared all right, save that he presented the appearance of having struggled some considerable time in above situation.

The box is fifteen feet square, square corners and lined, save at the wide door, which closes from outside, thus leaving an offset the width of door and depth of sill. At daylight a large clot of blood was found on the straw.

I was called then and found Rene easy, eating, pulse about fifty-five, though somewhat irregular, mucous membranes good color, and temperature normal. While examining him he passed a clot of blood about one and a half foot long, a cast of the rectum.

Kept him warm and gave several large buckets of hot water as rectal injections, and one ounce dose of tincture of ergot. In the course of an hour or two he appeared better. Left ergot to be given every three hours.

Visited him next morning. He had passed four clots much smaller, but no fresh blood. Pulse ninety, extremities cold, penis pendulous, no pain, and taking a few mouthfuls occasionally. Gave whiskey with ergot and digitalis, and hot water injections every three hours.

Visited him a number of times that day and night, and gave medicine and injections as before. During the day he passed several clots which looked like casts of floating colon.

In evening pulse over heart one hundred, very weak; staggering occasionally, and presented all the appearance of an early dissolution from exhaustion. Died that night.

Never exhibited any pain at any time. At autopsy found large intestines normally full of fæcal matter. Found no lesion on outside of intestines, or trace of anything wrong on their outside save that dark color from incased clotted blood.

I opened bowels from rectum forward, and at greater curve of sigmoid flexure of colon I found what I was looking for, i.e., the cause of bleeding.

I found an adherent clot about the size and shape of half a hen's egg. Removed it carefully, and upon washing the bowels found a loose flap of mucous membrane, corresponding in size to above clot and adherent by about an inch of its edge to the bowels.

There was no trace of an old ulcer, or any enlargement of blood vessels; on outside of bowels the surface was normal. Plenty of fæces posterior to injury and nothing in them that would produce mechanically an injury of this kind. This flap of mucous membrane, under strong magnifying-glass appeared normal, and had very ragged edges.

Moral: Have box-stalls smooth all around, corners rounded and lining sloping in.

EXTRACTS FROM EXCHANGES.

FRENCH REVIEW.

RUPTURE OF THE INTESTINES PRODUCED BY AN CEGAGROPILE.

By MM. NEYRAUD AND LEBLANC.

This cause has been seldom reported—hence its interest.

An aged mare is refusing her morning meal and is sent to the infirmary where she is placed on observation. Towards the afternoon she manifests some colics and was given a simple treatment, which gave but little relief. The next day she is considerably worse. She stands quiet, in a comatose condition, with her legs stretched apart, has marked tympanitis of both flanks, more on the left; the respiration is accelerated and snorty, the nostrils dilated, the mucous membranes pale; the pulse is not counted as the artery cannot be felt under the skin. The mare has no passages.

In the presence of this series of symptoms a positive diagnosis could not be made, except that of an internal hemorrhage. The mare died in a short time and at the post-mortem

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a longitudinal rupture was found towards the union of the colon and the rectum; it measured 10 centimeters (about 5 inches) in length, with ragged edges, soft, hemorrhagic and with clots adherent to the borders. Between the edges of the laceration there was a cylindroid, large œgagropile, partly in and partly out of the intestines, and weighing about 300 grammes. Besides this special lesion the abdominal cavity and its contents showed more or less intense inflammation with some gangrenous spots in the course of the intestine.—
Rev. of Zootech.

ANEURISM OF ONE OF THE BRANCHES OF THE LEFT FASCICULUS OF THE GREAT MESENTERIC ARTERY OPEN IN THE FLOATING COLON OF A HORSE SUFFERING WITH PARIETAL ENDOCARDITIS OF THE LEFT HEART.

By MM. DUCHENE AND CADEAC.

The difficulty of diagnosis of cardio-vascular affections is well known, and their complications are often unsuspected.

An anglo-normand, 18 years of age, is laid up with colics. On examination a champignon is found in the inguinal region, for which the horse is operated and rapidly recovers. Later on he is again suffering with dull, intermittent colics, the mucous membranes are pale, the movements of the heart strong and accelerated, micturation is difficult, the urine is dark yellow, viscouis and very alkaline. The fæces are at times mixed with blood. The animal began to lose flesh. Auscultation and percussion of the heart failed to detect the strong beatings of that organ in the previous days of his sickness. The fæces are of a dark coloration, and when at a later period they are extracted from the rectum they are mixed with dark blood. Rectal examination reveals toward the cæcum a large tumor which is suspected to be an aneurism of the posterior aorta, or one of its branches. The horse dies suddenly. At the post-mortem the following lesions are found: a rupture of the rectum of recent date; nothing peculiar in the chest, except the heart, whose left ventricle has its endocardium covered with rough, red and irregular granulations,

which are also found on the surface of the mitrale valve. Posterior to the liver, on the aorta, there is a tumor of the size of a child's head, weighing about six pounds, with irregular and rough surface and surrounded by peripheral infiltration. This tumor is made of white fibrous tissue, and is in connection above with the aorta, the posterior vena cava, the inferior face of the right kidney, and downward with the base of the cæcum and the origin of the floating colon. In its center there is an irregular cavity containing dark clots, but no stronglyli. Cleared of its contents, it presents several openings, one communicating with the great mesentery and continued with the aorta; another opens in one of the arteries of the small intestine; and a third communicates with the floating colon by an opening imperfectly closed by a fibrous clot.—*Ibid.*

ON THE BEST MEANS OF ANÆSTHESIA FOR ANIMALS.

By M. L. GUINARD.

In a long article published in the *Journal of Zootechnie*, the author, after considering under the different heads, first, the necessity to avoid as much as possible the anterior air passages in the administration of chloroform, which is generally dangerous; second, the mixed methods of atropine, morphine and chloroform combined, or of morphine and chloral; third, the mixtures of ether and chloroform; fourth, etherization proper, which he considers as the chosen method for anæsthesia, in saying that "among the good processes of anesthesia known and used for animals, simple etherization is at the head as the most commendable, by its facility in use, its regular march, its innocuity, the rapid disappearance of its effects, and the habitual simplicity in its effects," and having also mentioned the effects of ether and chloroform on animals suffering with heart or lung disease, concludes that outside of some special contra-indications, anæsthesia ought to be used in veterinary surgery a great deal more than it is, and especially for small animals; that complete is less dangerous than partial anæsthesia; that there are two principal modes to produce it, by simple etherization, or by the mixed methods

of morphine and chloroform, or better, morphine and ether. Chloroformization remains what it has always been, a quick and sure, but specially dangerous method, if not used with the greatest precaution; and that whatever mode of anæsthesia be used it is always dangerous in patients affected with heart or lung diseases.—*Four. of Zootech.*

CYST ADHERENT TO THE ŒSOPHAGUS.

By MR. ADENOT.

A steer which has for several years been used at draught work and is comparatively well kept, on account of the heavy task made upon him, is suddenly taken with tympanitis, which lasting for some time has to be relieved by the administration of a good purgative. The animal appears better, and when the winter season arrives he is left in the stable at rest with fair feeding, but instead of improving, he gets worse; another dose of physic brings him back to apparent health, when again the tympanitis returns with more severity; he is then tapped with trocar, and with repeated alternations of improvement and relapse he is destroyed for the butcher.

At the autopsy, every organ, thoracic or abdominal, is in perfect normal condition, but on looking toward the base of the heart, a large pouch is observed, adherent to the œsophagus, but free from any communication with it. This sac does not contain pus, but a great quantity of yellow citrine fluid of cystic nature, in the midst of which floats a number of solid disks of various dimensions.—*Ibid.*

BELGIAN REVIEW.

MESENTERIC ABSCESSES IN STRANGLES.

By MR. VERLINDE.

Considering the scarcity of literature on the subject, the author, after having searched in the various works on strangles, Bouley, Zundel, Champetier and others, and hav-

ing found the records of only two fatal cases published in the *Recueil de Medecine Veterinaire* in 1892, records two other cases which he had occasion to observe in his practice as army veterinarian. The first case is that of an animal which had strangles, mild in appearance, but seemed to have recovered, and was put to work, when he was taken with abdominal pains, which assumed such a character that he was destroyed. The post mortem revealed lesions of long standing, no doubt going back to the time of his first ailment. A large quantity of purulent, gray-reddish, foetid fluid with floating masses of pus and necrosed tissues. The peritoneum with chronic lesions, extending upon the various parts of the intestines and gluing the folds of the small intestines together. Among these a large phlegmonous cavity adherent to the thickened peritoneum and situated in the left flank and near the left kidney.

The second case is somewhat similar, the horse, however, dying from a rupture of the stomach, but presenting at the post mortem not only the lesions of the torn viscera, but also a large abscess of the size of a child's head and containing granular pus, white-gray in color, odorless and undergoing degeneration. This was also situated in the left side of the abdomen and near the left kidney.

The author completes his report by the consideration of the pathogeny, symptomatology, etc., etc., of this serious complication.—*Annales de Med. Vet.*

A CASE OF PHARYNGO-LARYNGEAL PARALYSIS.

By Mr. J. HAMOIR.

This is an interesting case of a young horse which was affected with symptoms of pharyngitis in the month of February, 1894, some three months later giving evidence of laryngeal complications which justified the diagnosis of paralysis of the two apparatuses, the pharynx and the larynx. Besides the usual manifestations of impossible deglutition, abundant salivation, discharge through the nostrils of food mixed with mucus, an intermittent roaring occurred at

different intervals during the whole length of the disease, which did not yield to treatment until late in December of the same year. The treatment consisted of repeated counter-irritations over the throat, tracheotomy to relieve the roaring, strychnia, iodide of potash, arsenic, with aromatic and antiseptic fumigations. Electricity was also tried but had to be abandoned after a month's trial. Arsenious acid internally, given daily, seemed to give the best results.—*Ibid.*

URINARY TUMOR.

By MM. HEBRANT AND GILSOUL.

Among some clinical cases recorded the authors write a case of an unusual occurrence. A young cow having had a somewhat difficult labor during which the vulva had been lacerated in several places, after a certain amount of febrile reaction, presented on the inside of the left leg, a little above the hock, a round tumor, as large as a man's head, which was first considered as of a septic nature, a sequelæ of infectious metritis. Being called to see her, the writers found the tumor fluctuating, painless, but of doubtful nature. An exploration made with a fine trocar gave escape to a clear liquid, transparent, yellow in color, and having a strong marked odor of urine. It was urine.

On the inferior plan of the vulva, a little back and on the left side of the urinary meatus, there was an irregular wound through which the finger could be readily introduced, which communicated at its bottom with a subcutaneous tract into which the urine had run and gathered in the tumor below. The tract was cleaned with carbolic water, the edges of the wound of the vulva cauterized and closed with a tent of wadding, replaced every time it came out. The recovery took place in ten days.

PROLAPSUS RECTI IN THE DOG.

By L. P. GOBBELS.

After giving the description of pup pug, which has a prolapsus of the rectum of several centimeters (some 3 or 4 inches),

the author having failed to obtain a constant reduction by the ordinary manipulations, taxis, pads, or sutures of the anus, had recourse to the application of the metallic ring which is employed for the contention of the uterus in a cow with some modification. Instead of giving it the form of a triangle, he merely flattened the ring sideways to give it an oval shape, and slightly bent it to adapt it to the hollow of the anus. This ring, well padded with oakum, is applied in the anal hollow after reduction of the prolapsus, and kept in place with four elastic strings or bands to the collar of the animal, to which a stiff collar of pasteboard is put on to prevent its biting. The recovery was complete.

In a subsequent article, Prof. Degive recalls another form of treatment, which consists in passing round the anus, at some little distance from its border, a string which is carried round the organ in and out of the skin, and brought back at a point near its starting insertion. By traction upon both ends of the string, the skin of the anus is drawn close at will and secured by a knot, similar to the string on a tobacco bag or a purse, and still the exploration with the finger or the passage of fæces softened by rectal injection can take place.—*Ibid.*

AMPUTATION OF THE UTERUS IN THE SOW.

By M. ADRIAEN.

The author reports two cases of this operation which differ somewhat in the manipulations applied, and were followed by different results. In the first animal the amputation was done by the application of a strong elastic band and amputation of the protruding uterus. There was but little hemorrhage, the uterine stump soon withdrew in the vaginal cavity and the animal did not seem the worse by the operation, except that her milk gave out and her litter soon died from starvation. Ten days later the sow was taken with severe pains, with violent efforts as if severely constipated, and though she received a cathartic, these becoming more and more serious, she was killed. At the post-mortem a large tumor was found at the bottom of the vagina, containing a small quantity of

pus. This tumor was pressing upon the rectum and interfered with defecation.

In the second case the same manipulations were carried out as far as the amputation, with the exception that to prevent the drawing in of the strings a wooden clamp was applied back of the elastic ligature. This dropped out after seven days and the sow felt well all the time, raising a litter of seven young ones.

To the application of the clamp the author attributes the success of the second operation and the prevention of the irritation which gave rise to the formation of the abscess found in the first instance.—*Ibid.*

GERMAN REVIEW.

BY W. V. BIESER, D.V.S.

TETANUS TOXIN.

An interesting paper by Nocard, the scope of which covers the serum therapy of tetanus in veterinary medicine, is likely to cause ripe interest amongst the profession. In a clear and concise way he reminds his readers of the theory of serum therapy. As regards the poison of tetanus, he affirms the following: In a guinea-pig the fatal dose is $\frac{1}{800}$ cm³.; in a strong horse, $\frac{1}{18}$ cm³. In the case of repeated injections at more or less frequent intervals of small doses of pure serum, or of serum heated to 65° or 70°, or combined with Gram solutions (slightly iodized), it is found that a time arrives during which the animal experimented upon can stand a comparatively large dose with impunity. Nocard could, in such cases, inject 300 cm³ into the jugular of a horse without toxic after-effects. How does the immunity set in? We know that the assertions of Behring and Kitasato, pupils of Koch, concerning this question are disputed by Roux. Whatever the hypothesis, the above facts remain true.

Following is the result of the serum injections:

1. Immunity invariably sets in as a result of the serum injections.

2. Immunity lasts only from 2 to 4 weeks.

3. The curative effects are surer to ensue the sooner the animal is inoculated with the specific microbe or with the ptomaines separated from the bacillus.

The serum therapy of tetanus unfortunately has a drawback. While in diphtheria we can inject diphtheritic serum at the beginning of the illness, at the time of the appearance of the false membrane, and can thus anticipate blood-poisoning, important in tetanus, we cannot anticipate blood-poisoning by the injection of tetanus serum, because, by the time the diagnosis of tetanus is made, the blood has been poisoned to a greater or lesser degree. Nocard thinks that the tetanus serum can only be regarded in the light of a prophylactic; he believes that it will not affect the course of a tetanus already established.

But in regions where tetanus abounds idiopathically, or where it follows wounds or surgical operations, two serum injections of 10 cm. each in the course of fourteen days will render the animal immune for a period of one and a half to two months.

The serum keeps its efficacy and purity for at least six months provided the flask is kept from heat and light, and opened only at the time of the injection.—*Oest. Monatschr. f. Thierhkl.*

IMMUNITY AGAINST FOOT AND MOUTH DISEASE ESTABLISHED
BY POTASSIUM IODIDE.

Prof. P., of the University of Prague, has made a discovery important enough to be brought to the notice of our readers.

For the purpose of curing syphilitic children, he made an agreement with a farmer to dose two of his cows with iodide of potash so that he could give the milk thus iodized to the children. One of the cows received 12 grams of iodide of potash for eight weeks, the other for ten weeks; these were housed with 68 other cows. During this time, foot and mouth disease occurred in the stable. At first two cows sickened, then others in the neighborhood. To shorten the

course of the disease, the proprietor infected the remaining cows with the toxic frothy discharge of the sick ones.

Among the latter were the two dosed with the potassium iodide. All the cows contracted the disease in a mild form, with the exception of five which showed severe symptoms. But the two iodized cows, although in the midst of the sick ones and although infected in the same way, remained immune. The effect of iodide of potash is analogous to that in the human subject. In a few days the symptoms of acute iodism showed themselves, viz., increased nasal secretion and salivation, appetite not diminished, thirst increased. In a few days the symptoms ameliorate, and then remain stationary during the period of the potassium iodide administration. The secretion of milk is increased and remains so to the end of the administration of the potassium iodide. The cows give 16 to 18 litres instead of 11 to 13, inasmuch as they take more water.

One cannot say what the value of this one observation is, nor how long immunity lasts, nor whether iodide of potash has a healing influence in foot and mouth disease. In any case the above fact is worthy of notice.

It would be desirable if veterinarians and the owners of cattle could make occasional trials, since it is important to substantiate the value of the iodide of potash in this disease.
Oest. Monatschr. f. Thierhkl.

ALOPECIA IN A CALF.

A five-weeks-old calf, normally covered with hair at birth, became hairless and bald during the course of eight days, with the exception of small areas on the back, feet, tail and ears. Even here the hairs could easily be extracted. With this condition the animal was very lively, did not freeze, and had a good appetite.

It was covered with blankets, and a salve consisting of 150 g. of lard, 40 g. of tincture of cantharides, 5 g. of creolin rubbed in, with which the body was treated in ten different parts. In fourteen days a greyish red down showed itself

similar to that on a young duck. In from six to eight weeks the calf was practically normally covered with hair again, and assumed its original light brown color.—*Berl. Thierarzt. Woch.*

DIABETES MELLITUS.

A five-year old Danish hound, comparatively well nourished, had in different areas weeping eruptions. The patient, in spite of a good appetite, was very languid and emaciated. Examination of the urine revealed 2 per cent. of glucose. In spite of careful dietetic regimen, the dog died. The muscles were flabby and atrophied; the kidneys were enlarged and hyperæmic; otherwise, no pathological changes.—*Ibid.*

PURULENT INFLAMMATION OF THE URACHUS.

A two-months-old calf showed in the neighborhood of the navel a swelling 15 cm. long and 10 cm. wide. Same was hard, fluctuating, and slightly painful. Urination was normal.

The swelling was opened widely and half a litre of foul-smelling pus emptied itself. The abscess walls were hard and thickened. In the depth of the abscess cavity, the urachus showed itself as an opening at least one inch wide. The canal was enlarged and actively inflamed. By means of a sound the bladder could be entered. In five days cure resulted from irrigation of the canal and bladder with a 2 per cent. potassium permanganate solution.—*Ibid.*

PARENCHYMATOUS NEPHRITIS.

In a batch of six horses, three sickened in the course of eight days with symptoms resembling azoturia. The urine, however, was of a light straw color instead of being red or brown. As afterwards became known, the groom had secretly given the horses brewery grain, rich oats and corn.

All three d.ed. Autopsy revealed severe parenchymatous nephritis dependent on toxic basis.—*Ibid.*

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OBSTETRIC REVIEW.

DROPSY OF THE FŒTAL ENVELOPES AND VENTRAL HERNIA
IN A MARE.

BY MR. DUTREY.

The history is this: grey mare, nine years of age, served by a jackass, is in her seventh month of pregnancy for several days, she is subject to colics, regularly after her meals. When in pain, she lays on her back, with her legs close to the abdomen, then remains for an instant on the lateral decubitus and gets up apparently relieved.

When visited by the author, she seems lively, eating well, with the respiration a little accelerated. What is peculiar about her is the enormous size of the abdomen. She looks like a cow suffering with tympanitis of the stomach; and yet the abdomen is hard, painless, and it requires a great deal of force to reduce that size. There is no tympanitis. Diagnosis is made of dropsy of the foetal envelopes, and the owner advised to have abortion brought on. He declined it.

A month later the mare shows indications of delivery, which she does comparatively easily, having thrown out at the moment of the rupture of the envelopes an enormous quantity of liquid and with the envelopes themselves representing a mass four or five times larger than usual.

Delivered, however, the mare seems very sick, very much prostrated, no fever, with intense dyspnoea, as she was suffering with extensive pulmonary emphysema. The respiration is jarring and double. Auscultation fails to demonstrate anything, even when listening towards the base of the right lung and trying to hear the borborygms which would suggest diaphragmatic hernia.

By degrees, however, the sub-abdominal œdema subsided and then a large ventral hernia is easily observable, which is of such a nature that no treatment can be applied.—*Rev. Vet.*

FŒTAL DYSTOKIA. (*Derodymian Monster.*)

BY MR. E. LAVIGNAC.

An eight-years-old cow, in labor, is laying on the right side, making violent expulsive efforts. The membranes are

ruptured, and the case turned over to the author after having been mutilated by an empiric. By exploration he discovers several extremities, which careful manipulation reveals as being four anteriors and two posteriors. Introducing the hand further he discovers in the left flank two heads well formed and united at the base of the neck, while in the right flank he finds the croup of the foetus with two tails.

Diagnosis: derodymus monster, sterno-abdominal presentation, left cephalo-iliac position.

Prognosis fatal. Cow killed for the butcher.

The foetus weighs 92 pounds, shows two heads attached at the base of the neck. There are two vertebral columns, mingling into one at the lumbar vertebræ. One croup with two tails, two anus, two scrotums, four anterior legs, the interns (one left and one right) are united near the elbow by the skin, as far as the fetlock, when below it the feet are free. The other two anterior and the two posterior are normal. —*Ibid.*

OTHER CASES OF FETAL DYSTOKIA.

By MR. DURRECHOU.

Celosomian Monster.—A cow is hard in labor. Exploration of the womb reveals the four extremities coming together. Embryotomy seeming too difficult to perform, forced extraction is attempted, and after slow but steady violent efforts a monstrous foetus is extracted.

This foetus has no sternum, no thoracic cavity. The ribs are bent crossways and the dorsal vertebræ, united together form a semi-circle. The legs are united together from the feet up, the head, thrown upon the sides of the trunk, is flattened. All the viscera are lodged in a large pouch adhering to the principal mass.

This is the third case occurring in the author's practice, and in all of them he had recourse to the same form of treatment.

Hydrocephalian and Ectromelian Monster.—In this case a cow had been in labor for several hours, and Mr. D. arrived too late to relieve her, but he found a foetus which had been extracted by force.

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This foetus is very small in proportion to the size of the mother. The legs are short, like those of a badger, and stuck to the trunk; the feet have five short toes, well marked; the bones of the cranium are missing, the frontal and occipital are merely a simple border; the brain, has the size of a small nut, the head forms a ball which ought to have contained five or six quarts of liquid. The face is horrid, there are three lips, the lower one divided in two. The right labial commissure does not exist, and the mouth communicates widely with the orbital cavity.—*Ibid.*

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

There was an unusually large meeting of the Veterinary Medical Association of New Jersey, in Achtel Stetter's, 842 Broad St., Newark, on Thursday, Oct. 10, 1895.

It was called to order shortly after 11 o'clock, by the President, Dr. J. W. Hawk, of Newark, besides whom there were present, Drs. J. Gerth and W. Runge, of Newark; J. C. Dustan, of Morristown; J. M. Everett, of Hacketstown; M. M. Stage, of Dover; R. O. Hasbrouck, of Passaic; Hugh Exton, of Washington; B. F. King, of Little Silver; William H. Lawes, of Red Bank; William Gall, of Mattawan; A. Brown, of Windsor; L. P. Hurley, of Hopewell; E. Britton, of Long Branch; S. Lockwood, of Woodbridge; and J. W. Stickler, M.D., of East Orange.

President Hawk suspended the regular order of business to permit the board of censors to examine two candidates. Both were subsequently elected to membership by a unanimous vote.

President Hawk then made an address in which he referred to the so-called anthrax which has been scaring the people of the State during the last few months, and declared his belief that there was no anthrax in New Jersey, as there had never been an official report on the matter from a veterinarian.

The Secretary reported Dr. A. D. Edwards, of Atlantic Highlands, as an applicant for membership. Dr. Dustan

read a paper on the organization and growth of the Association. Dr. Runge reported on the result of a trip to Cumberland County in search of anthrax, and had specimens and a microscope on hand for the benefit of the members.

After Dr. Gerth had read an interesting paper on meat inspection, the meeting adjourned at two o'clock in the afternoon for dinner.

It was reconvened at 3:40 o'clock, and Dr. Gerth's paper was discussed at length by Drs. Runge, Dustan, Everett, Hawk and King.

On motion of Dr. Hawk, a committee of three was appointed to investigate the manner in which the money was spent which was appropriated by the State for the stamping out of tuberculosis in New Jersey by a commission of the State Agricultural Board.

Drs. L. P. Hurley, W. B. E. Miller and William Gall were named as the essayists for the next meeting. The meeting adjourned to come together in April.

S. LOCKWOOD, Secretary.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

A meeting of the Montreal Veterinary Medical Association was held on Oct. 24th, 1895, in the Library of the Faculty of Comparative Medicine. There was a large attendance of members and visitors, among the latter being Dr. Miller, of Burlington, Vt. The minutes of the last meeting were read and approved.

The president introduced Dr. Miller, a graduate of '87, who presented a paper on the "Control of anthrax by attenuated germ products." He detailed the results of his experiments with anthrax vaccine upon a herd of cattle in the vicinity of Burlington. The infected area had not been free from the disease for twenty years. When called professionally to the herd in question ten animals had already died, and before the vaccine could be procured, four others had succumbed.

To produce immunity two inoculations are required, the

first being preparatory for the second, which is injected ten or twelve days after. The primary inoculation of the herd took place on Sept. 6th, the second upon Sept. 18th, with the result that only one animal died upon the fifth day following the first inoculation, since which time the herd had remained perfectly healthy in the face of the greatest possible danger of infection from the surroundings, which could not be altered. The only noticeable effect of the remedy upon the animals is a distinct rise of temperature, which invariably manifests itself within a few hours, reaching in some cases to 106 deg. F. and subsiding again in the majority of cases in three days, but in some cases extending to the seventh day.

The death of the one animal could not be attributed to any untoward effect of the agent, but only substantiates the claim for the antitoxin, namely, that the first injection is intended only to prepare the system to withstand the shock of the second. He described the routine of the process by which a sufficient degree of attenuation is reached. The amount of antitoxin used in each case was .25 c.c. The preparatory inoculation was made behind the right elbow; the second, or truly immunizing one, in the corresponding locality on the opposite side. During the treatment the animal is not necessarily subjected to any change, either in diet or surroundings; the only indication of its activity being the thermometric readings. He also pointed out the necessity of using a microscope in distinguishing between anthrax proper and symptomatic anthrax, or "black leg." Furthermore, he pointed out that as anthrax proper and symptomatic anthrax are two distinct diseases depending upon germs of truly different biological and morphological attributes, the use of anthrax antitoxin would be obviously an error in symptomatic anthrax.

Mr. James E. Craik read a carefully prepared paper on parturient apoplexy in a cow, giving the results of his experience with the disease. Most of the members were of the opinion that the nervous symptoms were the result of one or more toxins in the blood. Several members described their method of treatment the success of which, in most cases, be-

ing dependent upon the length of time elapsing between parturition and the onset of the disease, the longer delayed the more amenable to treatment. Dr. Miller stated that he had used hypodermically liquor strychniæ hydrochloratis in two drachm doses every hour, until convalescence. This in cases under observation was very successful, but had not been used sufficiently to induce him to speak positively as to its efficacy.

Mr. S. McNider reported a very interesting case of peritonitis in the horse, describing the symptoms, rapid course, and fatal termination of the disease. A brief discussion followed, after which the essayists for the next meeting were appointed, and the meeting adjourned.

HARRI H. DELL.
Sec'y-Treas.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, September 25, 1895, at 8 P.M., the president, Dr. J. M. Parker, in the chair.

A large number of the members were present.

Minutes of the last meeting read and accepted.

Dr. F. H. Osgood, as one of the delegates to the United States Veterinary Medical Association, reported the proceedings of the annual meeting at Des Moines.

The advisability of employing a stenographer was discussed, and the matter finally left in the hands of a committee consisting of Drs. L. H. Howard and H. P. Rogers.

On motion of Dr. Osgood, Drs. Beckett, Blackwood and Winchester were appointed a committee to draw up resolutions on the death of Dr. Williamson Bryden.

A large number of interesting cases were reported, the discussion of which lasted until a late hour, and making it one of the most interesting meetings we have had for some time—the everlasting subject of tuberculosis not being mentioned.

The regular monthly meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Wednesday evening, October 23, 1895; Dr. Parker in the chair. There was a good attendance.

Minutes of last meeting read and accepted.

Dr. Howard reported for the Executive Committee that the Secretary be instructed to send notices that the By-laws will be enforced where members do not pay their dues before January 1, 1896.

Dr. Howard reported for Special Committee on stenographer, after which a motion was made and carried that Dr. Howard be given full power to employ a stenographer for our next meeting.

Dr. Beckett reported for the Special Committee on resolutions on the death of Dr. Bryden as follows:

Whereas, It has pleased the Almighty in His divine providence to remove from our midst our esteemed colleague, Williamson Bryden; and

Whereas, The intimate relation and business intercourse with him have been most pleasant, it makes it befitting that we publicly record our appreciation of him; therefore be it

Resolved: That in the loss of Dr. Williamson Bryden we lose a friend and valued member of our Association and profession; therefore be it

Resolved: That the deep sympathy of this Association be extended to his relatives and friends; and be it further

Resolved: That a copy of these resolutions be forwarded to his relatives, spread upon our records, and published in the veterinary journals.

E. C. BECKETT,
THOMAS BLACKWOOD, } Committee.
J. F. WINCHESTER.

A number of interesting cases were reported and discussed.

Dr. A. Shannon, of Malden, applied for membership.

Drs. Beckett, Parker, Lebow and Lewis promised papers for future meetings.

HOWARD P. ROGERS, Secretary.

VETERINARY BOARD OF EXAMINERS IN PENNSYLVANIA.

The first regular meeting of the Pennsylvania State Board of Veterinary Medical Examiners for examination of applicants for license will convene on the third Monday of December, at the office of the Secretary, W. Horace Hoskins, 3452 Ludlow St., Phila. Pa.

BIBLIOGRAPHY.

LES MALADIES MICROBIENNES DES ANIMAUX.—(Microbian Diseases of Animals,) by Ed. Nocard & E. Leclainche. (G. Masson, Publisher, 120 Boulevard St. Germain, Paris.)

The names of these authors are already so well known and their individual writings so well spread in the veterinary world, that the news only of a new publication from either one of them would be sufficient to insure it a welcome reception by all veterinarians; but when a recent work is presented to the scientific world in which their combined efforts and their mutual researches and talent are united it becomes unnecessary to say a word as to its value, and such is what can be said of *Microbian Diseases of Animals*.

This new book, which comes to add another jewel to the already rich treasury of French veterinary literature, contains over 800 pages, in which many of the affections of microbial nature of animals are considered. Dedicated to the memory of that enthusiastic apostle of Pasteurian doctrines, H. Bouley, it is not strictly a work on pathology, as many diseases of microbial nature are not spoken of, such as *pneumonia*, *typhoid fever*, *gangrenous septicemia*, *tetanus*, etc., but in it are treated those affections whose microbe has remained to this day misunderstood or insufficiently well known. And it is with this object in view that the etiology, semiology, pathological anatomy, experimental study and prophylaxy of the *hemorrhagic septicemia*, *rouget of swine*, *anthrax fever*, *symptomatic anthrax*, *pleuro-pneumonia*, *rinderpest*, *gangrenous coryza of bovines*, *aphthous fever*, *horse-pox and cow-pox*, *distemper*

of dogs, of horse, tuberculosis, actinomycosis, ibotryomycosis, bovine farcy, epizootic lymphangitis, glanders, dourine, rabies, bacillar pyelo nephritis of bovines and mammitis, are presented to the reader in twenty-two chapters well written and of easy and pleasant reading.

That "Microbian Diseases of Animals" will meet at the hands of the veterinary profession a most hearty welcome is a prophecy easy to make, and one which in our estimation cannot be but realized as an appreciation of the great services these two celebrated veterinarians have rendered to scientific veterinary medicine.

MOLLER'S OPERATIVE VETERINARY SURGERY.—Translated and edited from the second enlarged and improved edition by J. A. W. Dollar, M.R.C.V.S., (W. R. Jenkins, 851-853 6th Avenue, N. Y.)

The issue of this valuable work, announced some time ago by the English press, will prove a great advantage to veterinarians and to veterinary students who have waited for its appearance, at last realized through the exertions of the well known house of W. R. Jenkins, who presents the book in a neatly bound form with a very easily read print.

The work is the translation of one of the best authors in Germany, and is done by one whose name has already become well known to the veterinary public. It is divided into twelve chapters, which cover the diseases of the head, those of the neck, of the thorax, of the abdomen, of the stomach and bowels, of the rectum and anus, of the urinary organs, of the organs of generation of the male and female, of the spinal columns, of the fore and of the hind limbs.

Every chapter is subdivided into sections, and the entire work covers over 700 pages, and contains 142 illustrations well designed.

It seems to us, however, that it can scarcely be considered as a special work on Operative Surgery, but, more strictly speaking, one on General Surgery, as it certainly treats more minutely on the subject of surgical diseases than on the description and illustration of the manipulations of operations for the treatment of said diseases; and it is probably, at least

in our estimation, on that account that Moller's Surgery will prove of such advantage to American veterinarians and students; it will fill with them an important space which, up to this day, has been comparatively empty, as by leaving Williams and some few others of smaller dimensions, the subject of surgery proper had no representative in English literature.

We congratulate the translator on his work, and feel satisfied that he will receive at the hands of Americans a hearty welcome.

BOOKS AND PAMPHLETS RECEIVED.

Traité de Therapeutique Chirurgicale des Animaux Domestiques. By M. M. Cadiot and Almy.

Experiment Station of Ames, Iowa. W. B. Niles, D.V.S.

Investigations Concerning Infectious Diseases among Poultry. By Mr. Smith, Ph.B., M.D., and Veranus A. Moore, B.S., M.D.

PRACTICAL THERAPEUTICS.

POWDER AGAINST THE DIARRHŒA OF CALVES.—Prof. Buti, in the *Clinica Veterinaria*, recommends the following: Salol, 8 grams, oxide of bismuth, 15 grams, carbonate of lime, 30 grams. Mix, and divide into six powders. Give two powders in two hours, the four others at four hours apart. Recovery follows after two or three days of treatment. Complete the operation by washing the udders of the mothers and watch the cleanliness of the stable.

MIDRIATIC SOLUTION FOR EFFECTS OF SHORT DURATION.—M. Groenow, objecting to the fact that the effects of atropine on the pupil may at times last unnecessarily too long in some cases, recommends the following solution, which produces its effect maxima after half an hour to disappear in about an hour: Chlorhydrate of ephedrine, 1 gram, chlorhydrate of homatropine, 1 centigram, distilled water, 10 grams. Introduce three or four drops into the conjunctival cul-de-sac with a hair brush or a glass dropper.

TREATMENT OF GASTRO-BRONCHITIS OF DOGS BY INTESTINAL ANTISEPSY, AND HYPODERMIC INJECTIONS OF EUCALYPTOL.—In the *Veterinary Review of Roumania*, we find the treatment of infectious gastro-bronchitis of dogs, which is distemper with digestive and respiratory manifestations, recommended by Mr. Firtuna, as follows: Hypodermic injections of a mixture of essence of eucalyptus, 20 grams, olive oil, sterilized with heat, 80 grams. Inject one cub. centim. to small, and two cub. centim. to medium-sized animals. One injection daily is ordinarily sufficient, but in severe cases two or even three may be required.

To these, intestinal antiseptics are added: Naphtol B, 10 grams, salicylate of bismuth, 5 grams, powdered sugar, 20 grams. Make fifty powders and give from three to six a day.

OINTMENT AGAINST FAVUS (Pirogoff).—Subl. Sulphur, 15 parts; carbonate of potash, 4 parts; liquid tar and tincture of iodine, of each, 50 parts; lard, 100 parts. Clip the hair short, apply a little of the ointment to soften the scabs. Remove afterwards the scabs daily, wash well and apply the ointment. The treatment lasts two or three weeks.

ANSWERS TO CORRESPONDENTS.

To Practice.—We have several inquiries—what shall we do with them—will you call for or shall we mail them?

Review numbers wanted.—Dr. A. W. Bitting, of Perdue University, Lafayette, Indiana, offers a good premium for the following: Vols. I, II, III; Vol. IV, Nos. 2, 3, 4 and 9; Vol. V, No. 12; Vol. XI, No. 12; Vols. XIII, XIV, XV.

Dr. S. Stewart, of Kansas City, Kansas, is wanting Vol. XVII; April, June, July, 1893, and January, 1895.

PERSONAL.

Dr. T. K. Deckard, of Middletown, Pa., one of the graduates of the A. V. C., class 1892, holds now the position of Postmaster in that city.

Dr. H. M. Ball, a graduate of the A. V. C., class 1888, has been elected lecturer, demonstrator of anatomy at the Ohio State University—Veterinary Department.

NEWS AND ITEMS.

Antirabic Sero-Therapy.—According to the *Lancet*, Drs. Tizzoni and Centanni have published a series of articles on the subject of the use of the serum of animals, protected by the original method. The value of this preparation has so far been tested only upon animals, but if it should prove to be what is claimed, it will do away with the expense of Pasteur Institutes, as the serum can be dried or made antiseptic and kept so that any one can use it.

Heredity of Tuberculosis.—The State Veterinary Department of Iowa has carried on an extensive series of experiments to determine whether tuberculosis in cattle is hereditary. These were made at the State Agricultural College and have extended over a long time. The conclusion was that the disease is not contagious.

Deodorizing Iodoform.—The odor of this preparation, if not dangerous, is disagreeable and annoying, but can be removed by oil of turpentine when it comes in contact with it; hands washed first with water containing a little turpentine and then washed again with soap and water will be found free from the smell of iodoform.

A Doctor Stable Club.—An organization has been formed in New York by a number of physicians, for the care of their horses and carriages. The services of all trades related to carriage driving will be engaged for a fixed monthly sum, and all repairs of carriage maker, harness maker and horse-shoer will be paid by the association. The cost of the whole service to each member will be about thirty dollars a month.

Anti Tubercle Serum.—The American Agriculturist says: Dr. Paquin's anti-tubercle serum is proving successful in apparently eradicating consumption from the human system. We suggest that it be applied to tuberculous cattle. If the disease may be located with one squirt of tuberculin, and with another squirt of anti-tubercle serum may be cured, the cow-killers' job will be gone!